



Leadership and capacity building in international osteopathic research: Introducing Strengthening osteopathy leadership and research (SOLAR) program

Cindy McIntyre^{a,b}, Gopi Anne McLeod^b, Ana Paula Antunes Ferreira^{b,c,d}, Francesco Cerritelli^{b,d,e}, Jerry Draper-Rodi^{a,b}, Jack Feehan^{b,f}, Michael Fleischmann^{b,g,h}, Kesava Kovanur Sampath^{b,i}, Chantal Morin^{b,j}, Lee Muddle^{b,f}, Niklas Sinderholm Sposato^{b,k}, Oliver P. Thomson^{a,b}, Loïc Treffel^{b,l}, Nicholas Tripodi^{b,g,h}, Brett Vaughan^{b,m,n,o}, Amie Steel^b, Jon Adams^{b,*}

^a Health Sciences University, UCO School of Osteopathy, London, UK

^b Australian Research Consortium in Complementary and Integrative Medicine, School of Public Health, University of Technology Sydney, Ultimo, New South Wales, Australia

^c Instituto Brasileiro de Osteopatia/ IBO, Brazil

^d Clinical-Based Human Research Department, Foundation C.O.M.E. Collaboration, Italy

^e NYIT College of Osteopathic Medicine, Old Westbury, NY 11568, USA

^f School of Health and Biomedical Sciences, RMIT University, Melbourne, Australia

^g College of Sport, Health and Engineering, Victoria University, Melbourne, Australia

^h Institute for Health and Sport, Victoria University, Melbourne, Australia

ⁱ School of Physiotherapy, Waikato Institute of Technology, Te Pukenga, New Zealand

^j School of Rehabilitation, Faculty of Medicine and Health Sciences, Université de Sherbrooke, Sherbrooke, Quebec, Canada

^k Department of Health and Rehabilitation, Institute of Neuroscience and Physiology, Sahlgrenska Academy, University of Gothenburg, Sweden

^l Institut Toulousain d'Ostéopathie, Pôle Recherche, Toulouse, France

^m Department of Medical Education, University of Melbourne, Melbourne, Australia

ⁿ Faculty of Health, Southern Cross University, Lismore, Australia

^o School of Medical and Health Sciences, Edith Cowan University, Perth, Australia

ARTICLE INFO

Keywords:

Osteopathy
Leadership
Research capacity
Evidence base

ABSTRACT

Research evidence has become the foundation of modern health services. Health professionals rely on sound research to provide safe and effective care for patients, for the development of innovative diagnostic and treatment practices and to develop policies supporting the provision of optimal healthcare. Osteopathy is an established profession with an emerging research evidence base. The Strengthening Osteopathic Leadership and Research (SOLAR) program is a recent international initiative aiming to further build the evidence base and research capacity of the osteopathy profession. The program was developed by The Australian Research Consortium in Complementary and Integrative Medicine (ARCCIM) at the University of Technology Sydney (Sydney, Australia) and funded primarily by Osteopathy Australia, with the support from the Osteopathic Foundation (UK), Osteopaths New Zealand (NZ), Unité Pour l'Ostéopathie (France), and Svenska Osteopatförbundet (Sweden). This paper describes the origins, objectives and features of the SOLAR program and outlines the importance of the program for future research and practice in the osteopathy profession. From its beginnings in 2022, to date, the SOLAR program has been highly successful, producing a substantial collection of concrete research and presentations, while enhancing the Fellows' capacity and confidence as leaders, both in osteopathy and the broader healthcare environment.

* Corresponding author.

E-mail address: jon.adams@uts.edu.au (J. Adams).

<https://doi.org/10.1016/j.ijosm.2025.100755>

Received 30 October 2023; Received in revised form 29 November 2024; Accepted 12 February 2025

Available online 22 February 2025

1746-0689/© 2025 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Abbreviations

SOLAR	Strengthening Osteopathy Leadership and Research
AHP	Allied health professional
AHPA	Allied Health Professions Australia
CAM	Complementary and alternative medicine
CEN	European Committee for Standardisation
EFFO	European Federation and Forum for Osteopaths
IH	Integrative health
MSK	Musculoskeletal
NCOR	National Council for Osteopathic Research
NHS	National Health Services
OA	Osteopathy Australia
OIA	Osteopathic International Alliance
OIPCLR	Oxford International Primary Care Research Leadership Program
WHO	World Health Organisation

Implications for practice

- As osteopathy transitions into the modern allied health workforce, there is a significant need for targeted generation of research
- The SOLAR program is a multinational effort to promote research capacity in the profession, as well as generate targeted research
- It is hoped that the program will provide new opportunities for osteopathy globally, giving access to new areas, and generating a new generation of clinician researchers and academics in the discipline

1. Background

Health research benefits patients, health professionals and organisations, and improves health outcomes, health services performance and processes of care [1]. Despite this, allied health professionals (AHPs) face challenges in an evidence-based world to develop their professional practices, partly because of the very small number of AHPs involved in clinical academic research [2]. There is no single definition of ‘allied health’ in the academic literature, but it is generally accepted that it applies to some disciplines that are not taught within conventional medical schools [3]. Some countries consider osteopathy an AHP, in others it is under the banner ‘Complementary and Alternative Medicine’ (CAM) or the more recent integrated/integrative [4], which focuses on multimodal health care approaches, combining for example, exercise rehabilitation, patient education, stress reduction, medication.

As an integrative health (IH) profession focusing on (musculoskeletal (MSK) healthcare, osteopathy is working to further develop its research and leadership capacity to address the challenges of implementing and using evidence in routine practice. Although there is a growing body of peer-reviewed research relevant to osteopathy [5,6], there has been an ongoing call from the profession and stakeholders for further research encompassing the complexity and subjectivity of osteopathic practice for scientific, economic, and professional reasons, and to drive health care policy and clinical practice guidelines [7,8,9,10].

Beyond the clinical effectiveness of osteopathy, authors have suggested a need for research focusing on evidence-based models of osteopathic care [11], and the preferences and characteristics of users of osteopathy to support patient-centred care [12]. However, osteopathy as a profession faces challenges in building research capacity to ensure empirical enquiry helps to adequately inform best practice, *Ibid*.

Most osteopaths work in private clinical practice [13,14,15], which suggests they may lack the time, skills, and resources to undertake and publish clinically relevant peer-reviewed research. Without strong research arising from within the profession there is the risk to the

profession of losing relevance [11]. Moreover, in line with all other health professions, osteopathy also requires a mature, sustainable research culture to further strengthen its role and position within contemporary healthcare systems worldwide [16]. The ongoing professionalisation of osteopathy faces several challenges globally, which to overcome require critical reflection on the nature of practice and knowledge [17]. Developing a culture, community, and expertise in research will facilitate this process of maturation *Ibid*.

Innovative and successful initiatives for building an evidence base and research capacity have been undertaken within primary care/general practice [18], naturopathy [19], CAM [20] and more recently within the chiropractic profession [16]. This type of program presents opportunities to engage the osteopathic profession, as well as build the research capacity and evidence base of IH professions. Inspired by these programs, the Strengthening Osteopathic Leadership and Research (SOLAR) program was established to meet the needs of the osteopathic profession globally, and foster an international, sustainable osteopathy research culture.

2. Aims of SOLAR—Strengthening Osteopathic Leadership and Research program

The SOLAR program is driven by six interrelated aims. The six aims were designed in direct response to challenges and needs facing the osteopathy research community. Whilst excellence in osteopathy research is developing, the wider osteopathy research landscape remains patchy with many in the field working in relative isolation [14,21–25] and/or without well-established networks, teams and/or infrastructure to support research efforts. To help establish a solid platform for future research success and capacity building, the SOLAR program aims to.

- 1) help identify and nurture a critical mass of early/mid-career emerging osteopathy research leaders (known as ‘SOLAR Fellows’).
- 2) instil and grow confidence and trust, and cement research collaborations and networks amongst these Fellows. Such aims are essential to helping develop a mature, sustainable research culture and landscape.

Beyond internal dynamics, it is also essential that an emerging research field such as osteopathy, draws upon and maximises alliances, resources, and partnerships with others from across academia and beyond.

Academics/researchers can often experience heavy workloads, and this situation can be further exacerbated for those juggling researcher-practitioner roles. SOLAR will provide:

- 3) SOLAR will facilitate and encourage multi-disciplinary, multi-method, multi-sector research approaches and designs for osteopathy, drawing upon a rich, broad platform of perspectives and skills from within and beyond osteopathy.
- 4) explicit research and leadership mentorship, training, and support to help each SOLAR Fellow secure their career development and strengthen their research and leadership activities and skills.
- 5) enable SOLAR Fellows the opportunity for essential ‘time out’ from everyday pressures and demands, to accommodate reflection, sharing, and encourage ‘big picture’ strategic thinking.

Finally, the SOLAR program acknowledges that producing and disseminating quality research output and evidence is essential for all mature health research fields, and as such the program seeks to:

- 6) help produce a prolific range of tangible research outputs, products, and communications (for a range of audiences both internal and external to the osteopathy profession).

3. The concept and evolution of the SOLAR program

The SOLAR Program has been founded and developed by two senior health researchers, Distinguished Professor Jon Adams and Associate Professor Amie Steel at the School of Public Health, University of Technology Sydney. Drawing inspiration from his personal experience as a Senior Fellow (and later a Senior Mentor) on the Oxford International Primary Care Research Leadership Program (OIPCRL), run by the Nuffield Department of Primary Healthcare Services, University of Oxford (<https://www.phc.ox.ac.uk>) [18], Professor Adams sought professional partnerships to develop a program for international osteopathic research, and similar programs for other health professions and areas of research/practice [26]. Through initial collaboration and generous support from Osteopathy Australia, the SOLAR program was founded in 2019. More recently, several other leading national professional associations - the Osteopathic Foundation (UK), Osteopaths New Zealand, the Swedish Osteopathic Association and the Unité Pour L'Ostéopathie (France) — have also provided support and partnership to the program.

The design and content of the SOLAR program was influenced by its aims, as well as the features derived from the OIPCRL Program. The program is initially three years long and centres around an intensive yearly residential week, with continued virtual collaboration using internet platforms for communication and engagement between each residential. During the residential programs, activities include mentoring, academic/research discussion, development of the intended research collaborations, career development support, insights into academic and research management, and presentations and workshops from invited senior academics. Outside these structured activities, the Fellows are given time and encouraged to develop collaborations and explore areas of mutual research interest.

4. The first SOLAR cohort

The initial worldwide call for Osteopathy Research Leadership Fellowship submissions attracted over 40 applications from international candidates. Following a competitive recruitment process and a round of candidate interviews, 15 early/mid/senior career leaders from seven countries formed the first cohort of the SOLAR program and were appointed as Visiting Research Scholars/Visiting Fellows at ARCCIM UTS (Australian Research Consortium in Complementary and Integrative Medicine, University of Technology, Sydney) to form the inaugural international research and leadership group. This first cohort include five who identify as She/Her and ten who identify as He/Him. Four are PhD students, four are Postdoctoral fellows, three hold assistant professorial roles, one is a research associate, and twelve, in addition to their research activities, work as clinicians. Some also currently hold, or have previously held, leadership roles within national or international professional organisations for osteopathy. These osteopathic research scholars were recruited as SOLAR Fellows based on their experience and expertise in osteopathy-related research and research collaborations/partnerships, and their potential to contribute to the future development of international osteopathy research and leadership (Table 1).

5. Program development and progress

Due to the Covid –19 Pandemic, the first residential scheduled for June 2020 was postponed, and the program was initiated via Zoom with meetings in December 2020 and November 2021. By October 2022, the resumption of national and international travel allowed the group to meet in Sydney for the inaugural residential. This included an intensive program focusing on leadership, governance, setting research priorities and developing international connections, both within and outside the group. Hosted at the University of Technology Sydney (UTS) and nested within the Australian Research Consortium of Complementary and Integrative Medicine (ARCCIM), the weeklong intensive residential was facilitated by ARCCIM's co-Directors, Distinguished Professor Adams,

and Associate Professor Steel. Despite restrictions to meeting prior to October 2022, Fellows collaborated and published journal articles, for example [27], and projects, for example, the development of a 36-item therapeutic approaches questionnaire to measure a range of different aspects and domains of osteopaths' practice, led by Dr Oliver Thomson [28]. During the 2022 SOLAR residential, Fellows identified and planned for more than twenty future collaborative research projects focusing on both musculoskeletal (MSK) and non-MSK conditions primarily in the areas of gerontology, paediatrics, sports medicine, and exercise therapy. Table 2

6. Output and impact to date

The outputs and impacts from the SOLAR programme are multidimensional. It encompasses upskilling of the Fellows, manuscript publications, conference presentations (both podium and poster), research grants, academic and career promotions, and doctoral/higher degree by research supervisions. During the 3 years from 2022 to 2024, five SOLAR fellows were awarded PhD's whilst on the program.

A SOLAR publication is defined as an article published with at least two fellows and/or mentors as co-authors.

7. Personal and profession related value

In 2024, SOLAR Fellows were given the opportunity to reflect and consider the specific value of the program, to them both personally and professionally. Several key themes emerged. First, and foremost the program helped Fellows feel less isolated and stopped them removing research from their career aspirations. It provided them with a sense of belonging and support. Given the urgent need for osteopathic researchers globally, the profession cannot afford to lose research-qualified osteopaths, especially in locations and settings where very few researchers exist.

A second theme was, the SOLAR mentorship has given individual Fellows the opportunity to grow and develop into mature researchers and leaders. This advancement creates a positive path forward for the profession by fostering and supporting the next generation of osteopaths who can drive the transformational change and sustainability needed for the profession to thrive.

Fellows also reported the program provided them with the opportunity to leverage diverse methodological expertise from Fellows across distances. By building a network that transcends geographic boundaries, the Fellows can optimise the research expertise held by specific individuals. This collaboration allows the Fellows to design and conduct robust, rigorous and impactful research from anywhere in the world on any topic or context. Furthermore, this network enhances the personal confidence of Fellows, which is critical for applying for grants, pursuing academic promotion and taking on new responsibilities as emerging leaders. The latter is particularly evident as several Fellows reported their capacity for research, and ability to step into leadership positions, was significantly enhanced by the SOLAR program. As a consequence, the profession will benefit from continued improvement in research and education.

8. Conclusion

SOLAR is the first international research leadership program in osteopathy. It brings together Fellows from across the world with the aim of advancing international empirical investigation into osteopathy, and to grow and support the profession to secure its place in the broader healthcare system. Through the innovative and critical perspectives of the SOLAR cohort of Fellows, much needed osteopathy research is being undertaken. The new knowledge generated will be disseminated and made accessible for clinicians, policy makers and patients to provide an evidence base for decision making, both internal and external to osteopathy.

Table 1
Description of participants in the SOLAR program.

Country; Pronoun; Academic qualifications	Current Positions	Why did you join SOLAR?	What do you expect to achieve?	How might SOLAR benefit Osteopathy?
UK, She/Her Osteopath DProf Ost. MPhil. Radiobiol. BSc Hons Ost.	Hon. Res. Fellow Clinician	To engage in international research collaborations, to continue being active in research, to help expand osteopathic research	Develop research skills, collaborate with other fellows, contribute to enhancing osteopathic research, increase research output	Help expand the osteopathic knowledge base. Produce clinically relevant research. Produce future osteopathic leaders with strong collaborations
France, He/Him Osteopath D.O. MSc, Ph.D.	Research Lecturer, Clinician	To engage in international research collaborations, to be active in a research team and help expand osteopathic research	To develop research skills, to learn from and to collaborate with other researcher fellows, contribute to enhancing osteopathic research, increase research output,	Help expand the osteopathic knowledge base. Produce clinically relevant research and scientific articles. Produce future osteopathic leaders with strong international collaborations. To speak with one legitimate voice.
Sweden, He/Him Osteopath MSc.	PhD. Student, Lecturer, Clinician	To learn from colleagues with different backgrounds, and to contribute to a constructive research culture within the osteopathic profession	Broaden research competence and establish fruitful collaborations	The SOLAR collaboration should be able to generate an increased knowledge base for various branches of the osteopathic profession, i.e., clinical practice, education, and research
Italy, He/Him Osteopath Ph.D. MPH. MSc. BSc. DO	Research Associate, Clinician	To participate in worldwide collaboration and connect to other osteopaths with experience in research in a stimulating environment	To gather knowledge from my colleagues and work with them to become a more successful researcher and ultimately pave the way for founding an international group that can guide the future of osteopathy.	SOLAR can enhance the profession in research output and relevance, and link future leaders who can inspire and empower osteopaths worldwide to employ evidence for their patient's benefit.
Australia, She/Her Osteopath M.Ost. M. Sports Med. Exercise. & Health	PhD Student, Non- practising clinician	To be part of an innovative international osteopathy research network, and to have the opportunity to learn from my peers	To develop research skills and increase research output. To progress & grow the professions research culture internationally.	The SOLAR program will build the capacity of the osteopathy profession by supporting an emerging international network of research leaders.
Australia, He/Him Osteopath M.Ost, B. AppSci, PGDipExSciGCTE, GradCertEd.	Ph.D Student Lecturer	To engage in impactful research collaborations, to progress research and build capacity related to osteopathic healthcare.	Advance qualitative and quantitative research skills; collaborate with other fellows and contribute to enhancing osteopathic research	Produce clinically relevant research and build capacity for future impactful studies. Strengthen interinstitutional collaborations.
UK, He/Him Osteopath PhD, MSc. BSc.	Associate Professor Clinician	To further research collaborations internationally and develop research skills & expertise	Exposure and engagement in a wide range of research approaches, methods and areas. Increased publication output and grant applications	Develop research and academic leadership of the profession. To increase the evidence-base of osteopathy
Australia, He/Him Osteopath M.H.Sc.	PhD Candidate Lecturer Clinician	It's a fantastic opportunity to network and grow research capacity of the profession.	Life-long research networks and novel publications	Contribute to improved osteopathic teaching and clinical practices, leading to a healthier and more sustainable profession more broadly.
Canada, She/Her Occupational therapist and Osteopath PhD	Assistant Professor	The opportunity offered by this program is the ideal step to broaden knowledge and increase my network to further contribute to the development of osteopathic research.	Develop international collaborations leading to publications and innovative projects. Stimulation from the expertise and experience of colleagues. Maintain motivation and coordinate efforts to develop quality research in osteopathy.	Help situate the place of osteopathy in the healthcare system; establish the most pressing needs in terms of research development. The emergence of research projects and knowledge transfers that can influence a better-informed practice of osteopaths.
New Zealand, He/Him Osteopath PhD, M.Ost, BPT, PG Cert	Lecturer Principal Academic Staff Member, Clinician	To engage with an international research network to facilitate osteopathic research in New Zealand.	To further my knowledge on various research designs, and to learn from colleagues. To contribute positively to osteopathic research.	Undertaking research that is patient-centred, and a critical appraisal of the profession.
Brazil, She/Her Osteopath Master's & PhD. in the Science of Rehabilitation UNISUAM RJ	Professor Clinician, Researcher	Become part of a solid international osteopathic network and collaborate with other fellows.	Identify areas of research priority for the osteopathic profession	Strengthen the osteopathic profession by encouraging the development of osteopathic research leaders and evidence base, thus positioning osteopathic care as playing an important role in general healthcare.
UK, He/Him Osteopath DProf (Ost), PG Dip, PG Cert, DO	Associate Professor Director Clinician	To be part of an international network of researchers in osteopathy; to take part in international projects	Leadership skills, publication output and friendship	Coordinated international research planning and output, increased research capacity and culture, and fostering collaboration between academics, clinicians and patients.
Australia, He/Him Osteopath M.HSc (Osteo), BSc (Clin. Sci)	Senior Research Fellow Clinical Educator	Collaboration, promotion of the profession and development of the evidence base. Developing the future identity of the profession with evidence-based principles.	Research collaborations, mentoring and peer support, increased evidence output for osteopathic practice.	Developing credibility as a legitimate, evidence based, allied health profession, development of advocates and leaders
Australia, She/Her Osteopath PhD, MAppSc (Physio), DipTeach, DO (Osteo)	Clinician Post Doc Research Fellow Clinical Advisor Australian Health Practitioner Regulator.	To extend current research efforts to include extensive research methodologies and projects	To tap into larger research networks and collaborate with experts in the field of health and wellness.	Demystify the practice of osteopathy by producing evidence-based outcomes and recommendations. Inspire and enable osteopaths to use evidence in their practice

(continued on next page)

Table 1 (continued)

Country; Pronoun; Academic qualifications	Current Positions	Why did you join SOLAR?	What do you expect to achieve?	How might SOLAR benefit Osteopathy?
Australia, He/Him Osteopath PhD.	Clinician Lecturer	To collaborate with other researchers globally	Broaden research skillset and develop an understanding of different methodologies	Increasing the visibility of the profession and to develop high-quality research to inform practice, health policy and education

Table 2

Academic metrics and achievements associated with the program (as of September 30, 2024).

Category	Metric
Research Output	
Published Manuscripts	49
Manuscripts Under Review	17
Conference Presentations	50
Grant Funding Secured	£1,100,000
Published books	1
Research Supervision	
Current PhD Students	16
- Of which: Osteopaths	5
Completed PhD Students	4
Masters Dissertations Supervised	100+
Academic Leadership	
Current Committee Positions	30
Journal Editorial Board Positions	11
Career Progression	
Career Promotions	4
Academic Awards	3

ORCID authorship contribution statement

Cindy McIntyre: Writing – original draft. **Gopi Anne McLeod:** Conceptualization, Writing – original draft. **Ana Paula Antunes Ferreira:** Conceptualization, Writing – original draft. **Francesco Cerritelli:** Conceptualization, Writing – review & editing. **Jerry Draper-Rodi:** Conceptualization, Writing – review & editing. **Jack Feehan:** Conceptualization, Writing – review & editing. **Michael Fleischmann:** Conceptualization, Writing – review & editing. **Kesava Kovanur Sampath:** Conceptualization, Writing – review & editing. **Chantal Morin:** Conceptualization, Writing – review & editing. **Lee Muddle:** Conceptualization, Writing – review & editing. **Niklas Sinderholm Sposato:** Conceptualization, Writing – review & editing. **Oliver P. Thomson:** Conceptualization, Writing – review & editing. **Loïc Treffel:** Conceptualization, Writing – review & editing. **Nicholas Tripodi:** Writing – review & editing. **Brett Vaughan:** Conceptualization, Writing – review & editing. **Amie Steel:** Conceptualization, Writing – review & editing. **Jon Adams:** Conceptualization, Writing – review & editing.

Availability of data and materials

Not applicable.

Competing interests

The authors declare no conflicts of interest. As a result of the generous funding from the organisations mentioned above, most of the travel and subsistence expenses are provided for the Fellows of the SOLAR program. There is no other fee received or financial compensation from the program.

Ethics approval

Not applicable.

Acknowledgments and Funding

The Strengthening Osteopathic Leadership and Research (SOLAR) program was established and supported by the following funding partners: Osteopathy Australia, Osteopaths New Zealand, Swedish Osteopathy Association, The Osteopathic Foundation (UK), Unité Pour L'Ostéopathie (France). AS is funded through an Australian Research Council Future Fellowship [FT220100610].

References

- [1] Boaz A, Hanney S, Jones T, Soper B. Does the engagement of clinicians and organisations in research improve healthcare performance: a three-stage review. *BMJ Open* 2015;5(12):e009415. <https://doi.org/10.1136/bmjopen-2015-009415>.
- [2] Cordrey T, King E, Pilkington E, Gore K, Gustafson O. 2022/01/17). Exploring research capacity and culture of allied health professionals: a mixed methods evaluation. *BMC Health Serv Res* 2022;22(1):85. <https://doi.org/10.1186/s12913-022-07480-x>.
- [3] Matus J, Walker A, Mickan S. Research capacity building frameworks for allied health professionals – a systematic review. *BMC Health Serv Res* 2018;18(1):716. <https://doi.org/10.1186/s12913-018-3518-7>.
- [4] Ng JY, Boon HS, Thompson AK, Whitehead CR. Making sense of “alternative”, “complementary”, “unconventional” and “integrative” medicine: exploring the terms and meanings through a textual analysis. *BMC Compl Alternative Med* 2016; 16(132):134. <https://doi.org/10.1186/s12906-016-1111-3>.
- [5] Bagagiolo D, Rosa D, Borrelli F. Efficacy and safety of osteopathic manipulative treatment: an overview of systematic reviews. *BMJ Open* 2022;12(4):e053468. <https://doi.org/10.1136/bmjopen-2021-053468>.
- [6] Morin C, Gaboury I. Osteopathic empirical research: a bibliometric analysis from 1966 to 2018. *BMC Complementary Medicine and Therapies* 2021, 2021/07/07;21(1):196. <https://doi.org/10.1186/s12906-021-03366-3>.
- [7] Licciardone JC. Responding to the challenge of clinically relevant osteopathic research: efficacy and beyond. *Int J Osteopath Med* 2007;10(1):3–7. <https://doi.org/10.1016/j.ijosm.2007.01.002>.
- [8] Low M. A novel clinical framework: the use of dispositions in clinical practice. A person centred approach. *J Eval Clin Pract* 2017, Oct;23(5):1062–70. <https://doi.org/10.1111/jep.12713>.
- [9] National Council for Osteopathic Research [NCOR]. Strategic plan. <https://ncor.org.uk/about/our-work/strategy/>; 2023.
- [10] Osteopathy Australia [OA]. Osteopathy Australia research activities. <https://www.osteopathy.org.au/article/osteopathy-australia-research-activities>; 2023.
- [11] 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>.
- [12] Steel A, Foley H, Redmond R. Person-centred care and traditional philosophies in the evolution of osteopathic models and theoretical frameworks: Response to Esteves et al. *Int J Osteopath Med* 2020;36:60–1. <https://doi.org/10.1016/j.ijosm.2020.03.001>.
- [13] Allied Health Professions Australia. Osteopathy. <https://ahpa.com.au/allied-health-professions/osteopathy/>; 2023.
- [14] 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>.
- [15] National Health Services [NHS] UK. Osteopath. <https://www.healthcareers.nhs.uk/explore-roles/allied-health-professionals/roles-allied-health-professions/osteopath>; 2023.
- [16] Adams J, Kawchuk G, Breen A, De Carvalho D, Eklund A, Fernandez M, Funabashi M, Holmes MM, Johansson MS, de Luca K, Moore C, Pagé I, Pohlman KA, Swain MS, Wong AYL, Hartvigsen J. Leadership and capacity building in international chiropractic research: introducing the chiropractic academy for research leadership (CARL). *Chiropr Man Ther* 2018;26(1):5. <https://doi.org/10.1186/s12998-018-0173-3>.
- [17] Thomson OP, MacMillan A. What's wrong with osteopathy? *Int J Osteopath Med* 2023;48. <https://doi.org/10.1016/j.ijosm.2023.100659>.
- [18] Magin P, Furler J, van Driel M. The Brisbane International Initiative: fostering leadership and international collaboration in primary care research. *Med J Aust* 2008;189(2):100–2. <https://doi.org/10.5694/j.1326-5377.2008.tb01930.x>.
- [19] Steel A, Redmond R, Schloss J, Cramer H, Goldenberg J, Leach MJ, Harnett JE, Van de Venter C, McLintock A, Bradley R, Hawrelak J, Cooley K, Leung B, Adams J, Wardle J. International prevalence of consultation with a naturopathic

- practitioner: a systematic review and meta-analysis. *BMJ Open* 2022;12(7). <http://10.1136/bmjopen-2021-056075>.
- [20] Steel A, Sibbritt D, Schloss J, Wardle J, Leach M, Diezel H, Adams J. An Overview of the Practitioner Research and Collaboration Initiative (PRACI): a practice-based research network for complementary medicine. *BMC Compl Alternative Med* 2017; 17(1):87. <https://10.1186/s12906-017-1609-3>.
- [21] Alvarez G, Roura S, Cerritelli F, Esteves JE, Verbeek J, van Dun PLS. The Spanish Osteopathic Practitioners Estimates and RATES (OPERA) study: a cross-sectional survey. *PLoS One* 2020;15(6):e0234713. <https://doi.org/10.1371/journal.pone.0234713>.
- [22] Cerritelli F, van Dun PLS, Esteves JE, Consorti G, Sciomachen P, Lacorte E, Vanacore N. The Italian Osteopathic Practitioners Estimates and RATES (OPERA) study: a cross sectional survey. *PLoS One* 2019;14(1):e0211353. <https://doi.org/10.1371/journal.pone.0211353>.
- [23] Orrock PJ. Profile of members of the Australian osteopathic association: Part 1 – the practitioners. *Int J Osteopath Med* 2008. <https://doi.org/10.1016/j.ijosm.2008.04.002>.
- [24] Plunkett A, Fawkes C, Carnes D. Osteopathic practice in the United Kingdom: a retrospective analysis of practice data. *PLoS One* 2022;17(7):e0270806. <https://doi.org/10.1371/journal.pone.0270806>.
- [25] Santiago R, Nunes A, Esteves J, Cerritelli F, Verbeek J, Lopes S, Paquete M, van Dun P. The Portuguese osteopathic practitioners estimates and RATES (opera): a cross-sectional survey. *Int J Osteopath Med* 2022;43:23–30. <https://doi.org/10.1016/j.ijosm.2022.04.002>. 2022/03/01/.
- [26] 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, 2018/05/10;18(1):352. <https://doi.org/10.1186/s12913-018-3158-y>.
- [27] Fleischmann M, Vaughan B, Bird A, Grace S, Fitzgerald K, McLeod G. Demographic, practice and clinical management characteristics of osteopaths referring to podiatrists: secondary analysis of a nationally representative sample of Australian osteopaths. *BMC Health Serv Res* 2022;22(1):224. <https://doi.org/10.1186/s12913-022-07520-6>.
- [28] Thomson O, Vaughan B, Sampath K, Draper-Rodi J, Fleischmann M, Cerritelli F. The osteopaths' therapeutic approaches questionnaire (Osteo-TAQ) - a content validity study. *Int J Osteopath Med* 2022;45:48–54. <https://doi.org/10.1016/j.ijosm.2022.07.001>. 2022/09/01/.