

Preparing osteopathy graduates for future careers: A review of osteopathic education in Australia

C. Mastronardo¹, D. Wong², S. Grace³, A. Fazalbhoy¹ & L. Muddle¹

Abstract

Introduction: Osteopathy in Australia faces an uncertain future as an unprecedented number of graduates enter the profession. While most are destined to work in private practice, workforce data suggests that limited career diversity and practitioner maldistribution are associated with growing rates of job dissatisfaction and professional attrition. Cultivating employability skills that promote diverse careers is the responsibility of education providers, yet it is unclear whether existing osteopathy programs are achieving this. Our aim was to determine if osteopathic curricula provide the employability skills required to prepare graduates for diverse careers.

Methods: This study was conducted as part of a larger project by RMIT University and Osteopathy Australia entitled “Strategic plan for the osteopathy profession 2030”. A two-part approach was utilised. Part A involved a comparison of core learning outcomes (contained within current Australian osteopathy curricula) against key employability skills required for success in a diverse range of careers. A consensus development panel was consulted in Part B to capture the perspectives of experts in the field.

Results: Content analysis and expert panel discussions identified the curricula has a strong focus on critical thinking, communication and problem solving and less focus on teamwork, leadership, initiative and enterprise and technological skills. Furthermore, osteopathy programs offer limited elective and micro-credentialing opportunities.

Conclusions: Career diversity and increased job satisfaction for osteopathy graduates may be achieved by empowering them with the skills to succeed in careers beyond private practice. This calls for curriculum reforms and expanded elective and micro-credentialing options to enable students to broaden their skills and widen their options.

Keywords: capabilities; careers; education; employability; osteopathy; pathways; skills; siphon

¹ School of Health and Biomedical Sciences, RMIT University, Melbourne, Australia

² College of Health and Biomedicine, Victoria University, Melbourne, Australia

³ School of Health and Human Sciences, Southern Cross University, Lismore, Australia

Correspondence

Miss Chanelle Mastronardo

Email: chanelle.mastronardo@rmit.edu.au

Introduction

The aim of education providers is to equip graduates with the qualities and skills needed to become global citizens and agents of “social good” (Barrie, 2004, p. 263). Increasingly, universities are expected to produce graduates with attributes that extend beyond the mere acquisition of knowledge and skills and towards lifelong learning (Barrie, 2004). The educational challenge involves imparting students with the work-ready attributes not only to pursue careers in their chosen fields of study but also to adapt these skills to other careers later in life and pursue job roles that are as yet unimagined in our “age of acceleration” (Higgs, 2019, p. 131). To this end, employability may be described as involving “self-management and metacognitive practices to monitor and develop capabilities to enhance potential for employment acquisition, optimisation, changes and satisfaction. Employability transcends occupations and a single career and looks to the future of work” (Higgs, 2019, p. 131).

Developing globally relevant and transferrable employability skills prepares graduates to capitalise on new career opportunities, benefiting not only the individual but also the profession as a whole (Longo, 2007; Marshall et al., 2016). Within the context of healthcare, career diversity serves to enrich the profession, widen its scope of practice and secure its longevity within the landscape of healthcare modalities (AGDH, 2016b). Furthermore, career diversity may be a protective factor against job dissatisfaction and professional attrition (Fitzgerald & Vaughan, 2016; Longo, 2007; Marshall et al., 2016; Mirtz et al., 2010).

Osteopathy is a small yet growing allied healthcare profession in Australia, with trends of new registrants suggesting the profession will double in size from 2019 to 2024 (AHPRA, 2017–2019). This rapid expansion will present a number of challenges for the profession, particularly when considering the limited career opportunities available for graduates in comparison with related healthcare professions. In Australia, osteopathy is a manual therapy profession primarily involved in managing patients with musculoskeletal conditions (Steel et al., 2017). Osteopaths in Australia complete a double Bachelor or Master of Osteopathic Medicine, unlike their American counterparts who complete a medical degree prior to specialising in osteopathy and, thus, typically practise in hospital settings. Unable to practise in hospitals, the vast majority (70–80%) of Australian osteopaths work as sole traders in community private practice (Adams et al., 2018), signifying an apparent absence of diverse career pathways (AGDH, 2016a; OBA, 2019). A minority (20–30%) have begun to expand into other relevant areas, including aged care, rehabilitation, chronic pain management, public health, health informatics and work health and safety, however this is occurring at a far slower rate and in lesser numbers than in related allied healthcare professions, such as physiotherapy, occupational therapy and exercise physiology (Adams et al., 2018). As a result, osteopathy struggles to compete for public awareness and funding from government and private health insurers.

Predicated on the *Capabilities of Osteopathic Practice*, osteopathic curricula as they currently stand equip graduates with the skills and capabilities required to build successful careers in private practice (Osteopathy Board AHPRA, 2019). While this narrow vision for employability has sustained the profession thus far, increasing competition from related professions coupled with imminent expansion of the workforce provide the impetus for change (Higgs, 2019). Cultivating employability skills that equip graduates to pursue diverse careers could not only enrich the profession but also improve its overall outlook (e.g., recognition, funding and workforce satisfaction/retention) in Australia (Orrock, 2017).

Introducing such diverse skills to graduates is a responsibility of education providers (Higgs, 2019), yet it is unclear whether existing osteopathy programs are successfully achieving this in preparing graduates for careers outside of the private practice setting. This review explores the range of employability skills currently prioritised within osteopathy curricula to determine if they lend towards career diversity. It aims to determine if osteopathic curricula provide the employability skills required to prepare graduates for diverse careers.

Methods

Study design

This study was part of a larger project conducted by RMIT University and Osteopathy Australia entitled “Strategic plan for the osteopathy profession 2030” conducted from April 2019 to July 2020. The design used a two-part approach. Part A involved a content analysis of curricula from the three osteopathy programs in Australia and a comparison of the core learning outcomes from these curricula against an employability skills index identified by relevance to the contemporary employment landscape and market desirability (Figure 1). In Part B, a consensus development panel was consulted to capture the perspectives of experts in the field and to make recommendations for improvement in key areas.

Part A: Content analysis of osteopathy curricula

Content analysis involves the application of predetermined codes to a dataset, with the intention of supporting or extending existing theory (Hsieh & Shannon, 2005). Informed by the work of Osmani et al. (2019), an index of in-demand employability skills (Figure 1) was developed for use in this study. Osmani identified employability skills as attributes that “make graduates more likely to gain employment and be successful in their chosen occupations” (p. 424). Several employability skills lists were reviewed and those of Osmani and The University of Adelaide were ultimately chosen and combined based on their relevance to the contemporary employment landscape and market desirability. Two notable additions were made, including cultural intelligence and lifelong learning, which are industry-specific and highly relevant to healthcare professions (Saha et al., 2008).

Figure 1*Employability Skills Index (ESI)*

ES Code	Employability Skill
1COM	Communication
2TWK	Teamwork
3PBS	Problem solving
4TNS	Technological skills
5LEA	Leadership
6SAM	Self-awareness and management
7FLE	Flexibility/adaptability
8CRI	Critical thinking
9PAO	Planning and organising
10IAE	Initiative and enterprise
11CUL	Cultural intelligence
12LLL	Lifelong learning

Course/program learning outcomes (CLO or PLO) from the three osteopathy programs in Australia were extracted from their respective websites: Royal Melbourne Institute of Technology (RMIT), Southern Cross University (SCU) and Victoria University (VU) (Appendix A). These were tabulated and mapped against the Employability Skills Index (ESI) using a process of constant comparison (Kolb, 2012) to determine a relationship with the stated objectives of the osteopathy courses (Table 1). A coding framework was created to ensure inter-coder reliability (DW, LM, SG) and consistency throughout the mapping process. Data was coded independently by DW, LM and SG and then compared, with 88.9% agreement. Any disagreements were then resolved through discussion. If discussion failed to achieve a consensus, CM was available for resolution. To visualise their prioritisation in the curriculum, a summary of the combined frequencies of employability skills evident in the course/program learning outcomes across RMIT, VU and SC are ranked highest to lowest in Table 2.

Part B: Consensus development panel

The second part of this study involved consultation with a consensus development panel, a technique commonly employed for the creation of policy and strategic plans (Waggoner et al., 2016). The mapping of university course/program learning outcomes against desirable employability skills (Tables 1 and 2) was subjected to the opinions of leaders in the field of osteopathic education and clinical practice. The panel identified areas for improvement within the current osteopathic curricula and made recommendations to better impart relevant and desirable employability skills to graduates (Halcomb et al., 2008).

Table 1

Mapping of University Learning Outcomes Against Employability Skills for Each of the Australian Osteopathic Universities

	RMIT	SCU	VU
Communication	PL01, PL04 , PL06	CL04, CL06	CL01, CL02, CL03 , CL07
Teamwork	PL06	CL06	
Problem solving	PL01, PL03, PL06	CL01	CL01, CL02, CL04, CL05, CL06
Technological skills	PL04	-	-
Leadership	PL05, PL06		CL07
Self-awareness and management	PL01, PL07	CL03, CL05	CL02, CL09
Flexibility/adaptability	PL01	CL02	CL01, CL02, CL06, CL08
Critical thinking	PL01, PL02, PL03, PL08	CL01, CL04	CL01, CL02, CL04, CL05, CL07, CL08
Planning and organising	PL01, PL03, PL05	CL02	CL01, CL07
Initiative and enterprise	PL05	CL02, CL03	CL08
Cultural intelligence	PL01, PL04	CL06, CL07	CL01, CL02, CL04, CL06#
Lifelong learning	PL02, PL07, PL08	CL04, CL05	CL09

Key: CLO = course learning outcome; PLO = program learning outcome; bolding = direct link to learning outcome; non-bolding = indirect or inferred link to learning outcome; # = not specific to manual therapy skills

Table 2

Frequency of Employability Skills Across University Course/Program Learning Outcomes

Rank	Employability Skill (Code)	Direct	Indirect	Total
1	Critical thinking (8CRI)	2	10	12
2	Problem solving (3PBS)	1	8	9
2	Communication (1COM)	4	5	9
4	Cultural intelligence (11CUL)	4	4	8
5	Flexibility/adaptability (7FLE)	0	6	6
5	Lifelong learning (12LLL)	4	2	6
5	Planning and organising (9PAO)	0	6	6
5	Self-awareness and management (6SAM)	4	2	6
9	Initiative and enterprise (10IAE)	2	2	4
10	Leadership (5LEA)	3	0	3
11	Teamwork (2TWK)	2	0	2
12	Technological skills (4TNS)	0	1	1

Note: Two skills ranked second equal and four skills ranked fifth equal, as indicated by ranking

Panel recruitment

The steering committee for the larger “Strategic plan for the osteopathy profession 2030” project acted as the consensus panel for this study. Potential participants were invited to submit a written application detailing their academic credentials and motivation for involvement. Amongst the key criteria for selection were demonstrable experience in industry, academia, clinical education and leadership. Applications were reviewed by the project leaders and a final panel consisted of 11 members from a diverse range of educational and professional settings (Table 3), including:

- industry: practising clinicians in private or public healthcare settings, including aged care and rehabilitation
- academia: published authors, associate editors of academic journals and leaders of dedicated osteopathy research networks in Australia
- clinical education: educators and clinical supervisors from various health science disciplines (osteopathy, chiropractic, nursing, alternative medicine)
- leadership: an osteopathy discipline leader and members of various academic boards and advisory committees.

Table 3

Expert Panel Demographics

Expert Number	Gender	Expertise in Clinical Practice (years)	Expertise in Higher Education (years)
1	M	12	6
2	F	17	4
3	M	34	19
4	M	37	19
5	F	35	13
6	M	19	7
7	F	20	3
8	M	13	6
9	F	17	4
10	F	10	5
11	M	N/A	N/A

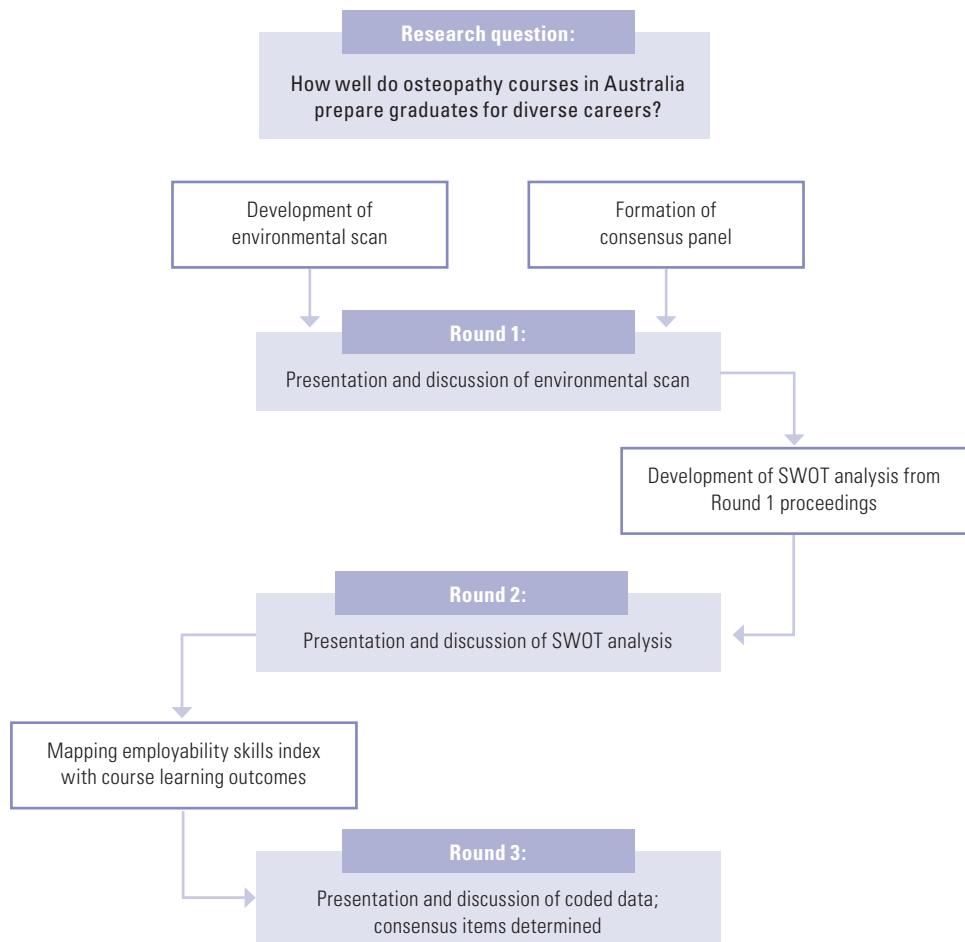
Panellists agreed from the outset that the ultimate goal of ensuing discussions was to improve employability of osteopathic graduates in Australia by imparting knowledge and insights from their diverse backgrounds and abundant expertise. Discussions took place in a series of face-to-face meetings (Rounds 1–3) headed by the elected chairperson. Prior to discussions, a terms of reference document was created, stipulating that a quorum of eight panellists and a consensus of 80–100% would be required for all strategic recommendations.

Ethics

Panellists provided written consent to have meeting proceedings recorded and transcribed for content analysis in preparation for publication and dissemination. Consent documentation was distributed to panellists prior to the Round 1 meeting and signed by all. Following consultation with one of the affiliated universities' ethics committees, it was deemed that further ethics approval was not required.

Figure 2

Rounds of Consensus Development



Data collection

The work of Halcomb et al. (2008) informed the planning and conduct of face-to-face panel meetings (Rounds 1–3) and the subsequent consensus development process. An agenda was created for each round, identifying the items to be discussed—Round 1: environmental scan with relevant discussion prompts; Round 2: strengths, weaknesses, opportunities and threats (SWOT) analysis; and Round 3: recommendations and consensus items based on mapping of university course/program learning outcomes against desirable employability skills. These are summarised in Figure 2.

Initially, an environmental scan of the pedagogical landscape relevant to osteopathy was conducted. Literature from the universities (course/program learning outcomes for osteopathy courses) was juxtaposed against workforce statistics from the Osteopathy Board of Australia (careers for osteopathy graduates) in order to identify the types of careers graduates were entering into based upon the skills they obtained at university.

In Round 1, the consensus panel convened to discuss the environmental scan. They were presented with three key prompts to aid discussions:

What are the take-away points from this environmental scan?

What actions should be taken regarding the points presented?

How can success be measured in this regard?

A summary of the discussions from Round 1 were transcribed as meeting minutes by CM and used to inform the development of a SWOT analysis (Table 4) of osteopathic education and careers in Australia.

In Round 2, the consensus panel convened to discuss the SWOT analysis and determined that a lack of career diversity among graduates represented a significant weakness in the profession. The panel determined that further investigation was required to identify the factors underpinning this lack of career diversity at university curriculum level.

In Round 3, the consensus panel was presented with the data analysed by DW, LM and SG in Part A, where university course/program learning outcomes were compared against desirable employability skills that lend towards graduates' success in diverse careers (Tables 1 and 2). The panel then discussed areas for improvement and made recommendations (consensus items) (Table 5) to broaden education and careers in osteopathy.

Table 4*SWOT Analysis of Osteopathic Education and Careers in Australia*

Strengths		Weaknesses	
Education		Education	
<ul style="list-style-type: none"> Curriculum is universally aligned with Capabilities of Osteopathic Practice (2019) Curriculum aptly prepares for careers in private practice 		<ul style="list-style-type: none"> Curriculum reflects lack of skills in technology, business and teamwork Curriculum lacks preparation for careers outside private practice 	
Opportunities		Threats	
Careers		Careers	
<ul style="list-style-type: none"> Courses universally offer opportunities for placement, internship and further study Graduates are eligible to enter some postgraduate courses in public/community health, for example 		<ul style="list-style-type: none"> Limited opportunities for graduates to diversify due to lack of externally recognised pathways Lack of career diversity with the vast majority in private practice Maldistribution of osteopaths linked with locations of universities 	
Education		Education	
<ul style="list-style-type: none"> Impart desirable skills to students including technology, business and teamwork Encourage "sideways" career interests by introducing subject electives 		<ul style="list-style-type: none"> Poor focus on team-based education and interdisciplinary learning Curriculum silos/siphons towards careers in private practice Manual therapy is at risk of becoming non-evidence-based 	
Careers		Careers	
<ul style="list-style-type: none"> Encourage career diversity by exposing students to opportunities outside of private practice and creating interdisciplinary avenues for communication and collaboration Create micro-credentialing opportunities for practitioners to encourage diversification 		<ul style="list-style-type: none"> Lack of opportunities to diversify into varied careers Lack of practitioners in careers outside private practice, e.g., public/community health, economics, risk assessment, work health and safety, rehabilitation, aged care Risk of attrition due to lack of career pathways 	

Table 5

Recommendations (Consensus Items) for the Future of Education and Careers in Osteopathy

Consensus Item	Recommendations
Impart desirable employability skills	<ul style="list-style-type: none"> • Incorporate core electives into the curriculum to improve technology and business skills • Foster greater team-based and interdisciplinary learning within clinical placements
Encourage diverse career pathways and foster interests	<ul style="list-style-type: none"> • Incorporate broader core electives into the curriculum, including health economics, public health, work health and safety, risk management, case management, insurance • Encourage exposure to pathways outside of private practice via internships/placements in aged care and rehabilitation • Change curriculum to explicitly reflect a wider scope of careers for students
Create pathways to diversify and foster interests	<ul style="list-style-type: none"> • Incorporate core electives in areas such as aged care, rehabilitation, chronic pain • Encourage entry into postgraduate courses in these areas OR create micro-credentialing opportunities for practitioners

Data analysis

In Part B, a content analysis technique similar to that used in Part A was employed. Initially, the panellists independently read the environmental scan, which served as a stimulus for discussion at the Round 1 meeting. Concepts raised in meeting discussions were scribed by CM into meeting minutes. The meeting minutes were then provided to panellists individually for further comment. All comments were then reviewed by CM and LM, who grouped together and refined key themes. These key themes were incorporated into a SWOT analysis by CM and again presented to the panel as a stimulus for discussion at the Round 2 meeting. Round 3 proceedings occurred in a similar way.

Quality criteria

A coding framework was created to ensure inter-coder reliability (DW, LM, SG) and consistency throughout the mapping process (Appendix B). The quality of the data was ensured by constant comparison throughout (Kolb, 2012). A CASP (2018) checklist for qualitative research was also included as a measure of quality.

Results

Part A: Content analysis

The RMIT, VU and SCU learning outcomes were identified and ranked highest to lowest (Table 2), echoing the findings from Table 1. Interestingly, two of the top three in-demand employability skills identified by Osmani et al. (2019), namely communication and problem solving, were also present in the top three most frequently represented in the university curriculum. Conversely, teamwork, leadership and technological skills were among the most poorly represented.

Part B: Consensus panel

A SWOT analysis of how well Australian osteopathic curricula in Australia prepare graduates for future careers is presented in Table 4. Echoing the findings of Part A, the panel determined that important skills in technology, teamwork and business initiative/leadership were not represented well in osteopathic curricula. This was identified as a significant threat towards employability in diverse careers such as health informatics and aged care and was thought to contribute to the siphoning of graduates towards lifelong careers in private practice settings. Among other strategies, it was determined that broadening the curriculum to encompass and reflect these skills provided an opportunity to encourage career diversity (Table 5).

Discussion

The purpose of this study was to determine if osteopathic curricula provide graduates with the employability skills required to succeed in a range of diverse careers. This was achieved by engaging a panel of experts to identify areas of strength and weakness within osteopathic curricula and make recommendations to promote career diversity. As aptly stated by Osmani et al. (2019), “enriching academic programs to deliver the most up-to-date and in-demand graduate attributes and skills is vital” to ensuring the future of a profession (p. 429). The results of this study have highlighted clear deficits in high-demand employability skills in osteopathic curricula (e.g., teamwork, leadership, initiative, enterprise and technological skills), which may hinder graduates in their pursuit of new careers that increasingly demand such skills.

Preparing graduates for diverse careers

Analysis of data in Parts A and B revealed that the current osteopathic curricula have a strong focus on critical thinking, communication and problem solving. According to the literature, these skills feature heavily in problem-based, or case-based, learning aimed at preparing graduates for the realities of working competently in private practice (Fryer, 2008; Lalonde, 2013). While it may be argued that these skills could also lend towards other careers, their application and relevance within these contexts may not be explicit in the curricula. Consistent with the workforce statistics for the profession, it may be that a historical focus on teaching these skills has aptly prepared graduates for careers in private practice while simultaneously disempowering or disincentivising them to look beyond (Adams et al., 2018). A greater focus on developing teamwork, leadership, initiative and enterprise and technology skills may help to mitigate this (Tables 1 and 2).

Current efforts to encourage diverse careers

During panel discussions, career diversity was determined to be essential for the future of the osteopathy profession in light of its growing workforce and increasing competition for patients. To this effect, recommendations (consensus items) were made to encourage career diversity amongst osteopathy graduates (Table 5). These included: (1) incorporating

core electives into the curriculum to broaden student exposures (e.g., health economics, public health, technology in healthcare, work health and safety, risk management), (2) creating opportunities for student placement outside of private practices to foster potential areas of interest (e.g., aged-care facilities, pain management clinics, rehabilitation hospitals, sporting clubs) and (3) offering postgraduate courses and micro-credentialing opportunities to cater for practitioners wanting to diversify. Importantly, a lack of alternate career options for practitioners who find themselves unable to continue working in private practice (due to illness, injury, financial instability, career dissatisfaction) typically leads to professional attrition (Adams et al., 2018; Kleinbaum, 2009). Providing these individuals with the skills to move into alternate or related careers without having to return to university may mitigate this significantly (Adams et al., 2018).

Some of these recommendations are currently in effect to varying degrees across the three osteopathic universities in Australia, with all three institutions offering career pathways for research and external placements outside of private practice (e.g., multidisciplinary clinics, aged-care facilities, other allied healthcare clinics). While this is a positive step towards career diversity, it may be argued that external placements could prove ineffective for students without the relevant employability skills and foundations needed to succeed in these areas, as demonstrated by Hamshire et al. (2012, 2013). Consequently, there is scope for developing these skills as a foundation for maximising opportunities such as external placement.

Broadening graduate skills

Teamwork, leadership, initiative and enterprise and technological skills have been identified as integral for self-directed learning readiness and resilience among graduates (Robinson, 2019). Building readiness and resilience may significantly widen the perceived career scope for graduates, while providing them with the necessary skills to succeed in these pursuits. This was demonstrated by Hamshire et al. (2012, 2013), who cited lack of preparedness and poor resilience in clinical placements as predisposing factors for program withdrawal in nursing and allied health students. Howe et al. (2012) also identified self-efficacy and resilience as key factors for program completion among medical students. These studies provide further impetus to shift the osteopathic curriculum towards self-directed learning readiness and perhaps reframe traditional problem-based learning in a way that lends towards broader careers outside of traditional private practice. Overall, these findings suggest that broadening employability skills amongst graduates and shifting towards self-directed learning readiness may help to promote career diversity while protecting against professional attrition.

Limitations

The findings of this study are not intended to be generalised. The consensus panel was comprised of leaders and experts in the field of osteopathic education in Australia, and their perspectives contributed to a rich data set. Although there were some panel

members with cross-disciplinary expertise, greater representation from experts in different disciplines could have been included to enrich discussions. The quality of the data was ensured by constant comparison throughout. There would be value in conducting a follow-up study regarding the implementation of panel recommendations (consensus items) and whether this translated into broader career pathways, reduced rates of attrition and improved job satisfaction for graduates. Furthermore, a comparison could be performed regarding the employability skills fostered in related healthcare professions, such as physiotherapy, chiropractic, occupational therapy and exercise physiology.

In broad terms, this research may have relevance for tertiary education as a whole in highlighting the importance of providing graduates with desirable employability skills to succeed in diverse fields. These skills could be incorporated as self-directed learning tasks or assignments within the regular curricula, or they could be delivered as course electives. These could be incentivised as prerequisites for completing final-year external student placement in a clinical setting of the student's choosing. Encouraging all students to participate in an external placement program will increase their exposure to diverse settings and enable them to develop a range of employability skills as a result.

Conclusion

Content analysis and expert panel discussions identified both strengths and weaknesses within current osteopathic curricula. While there was a strong focus on critical thinking, communication and problem solving, the curricula lacked a similar focus on teamwork, leadership, initiative and enterprise and technological skills. The curriculum has historically siphoned graduates towards careers in private practice and potentially disempowered them from looking towards diverse careers. A shift in focus towards broader skills and self-directed learning readiness is called for to empower graduates with the abilities and resilience to succeed in diverse areas of healthcare.

Funding and conflicts of interest statement

CM is a research assistant employed through RMIT University and supported by a research grant from Osteopathy Australia. LM is supported by an academic appointment as a lecturer in the Discipline of Osteopathy, School of Health and Biomedical Sciences, RMIT University. AF is supported by an academic appointment as a discipline leader, senior lecturer in the Discipline of Osteopathy, School of Health and Biomedical Sciences, RMIT University.

References

- Adams, J., Sibbritt, D., Steel, A., & Peng, W. (2018). 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 Services Research*, 18(1), 266–279. <https://doi.org/10.1186/s12913-018-3158-y>
- Australian Government Department of Health (AGDH). (2016a). *Osteopaths: 2017 factsheet*. Retrieved March 23, 2020, from <https://hwd.health.gov.au/resources/publications/factsheet-alld-osteopaths-2017.pdf>
- Australian Government Department of Health (AGDH). (2016b). *Physiotherapists: 2017 factsheet*. Retrieved March 23, 2020, from <https://hwd.health.gov.au/resources/publications/factsheet-alld-physiotherapists-2017.pdf>
- Australian Health Practitioner Regulation Agency (AHPRA). (2017–2019). *Statistics*. Retrieved February 21, 2020, from <https://www.osteopathyboard.gov.au/about/statistics.aspx>
- Barrie, S. (2004). A research-based approach to generic graduate attributes policy. *Higher Education Research & Development*, 23(3), 261–275. <https://doi.org/10.1080/0729436042000235391>
- Critical Appraisal Skills Programme (CASP). (2018). *Qualitative checklist*. Retrieved February 21, 2020, from <https://casp-uk.net/wp-content/uploads/2018/01/CASP-Qualitative-Checklist-2018.pdf>
- Fitzgerald, K., & Vaughan, B. (2016). A snap-shot of attrition from the osteopathy profession in Australia. *International Journal of Osteopathic Medicine*, 22, 33–39. <https://doi.org/10.1016/j.ijosm.2016.06.001>
- Fryer, G. (2008). Teaching critical thinking in osteopathy: Integrating craft knowledge and evidence-informed approaches. *International Journal of Osteopathic Medicine*, 11(2), 56–61. <https://doi.org/10.1016/j.ijosm.2008.02.005>
- Halcomb, E., Davidson, P., & Hardaker, L. (2008). Using the consensus development conference method in healthcare research. *Nurse Researcher*, 16(1), 56–71. <https://doi.org/10.7748/nr2008.10.16.1.56.c6753>
- Hamshire, C., Willgoss, T., & Wibberley, C. (2013). Should I stay or should I go? A study exploring why healthcare students consider leaving their programme. *Nurse Education Today*, 33(8), 889–895. <https://doi.org/10.1016/j.nedt.2012.08.013>
- Hamshire, C., Willgoss, T., & Wibberley, C. (2012). “The placement was probably the tipping point”: The narratives of recently discontinued students. *Nurse Education in Practice*, 12(4), 182–186. <https://doi.org/10.1016/j.nep.2011.11.004>
- Higgs, J., Crisp, G., & Letts, W. (Eds.). (2019). *Education for employability (Volume 1): The employability agenda*. Brill.
- Howe, A., Smajdor, A., & Stöckl, A. (2012). Towards an understanding of resilience and its relevance to medical training. *Medical Education*, 46(4), 349–356. <https://doi.org/10.1111/j.1365-2923.2011.04188.x>
- Hsieh, H., & Shannon, S. (2005). Three approaches to qualitative content analysis.

- Qualitative Health Research, 15(9), 1277–1288. <https://doi.org/10.1177/1049732305276687>*
- Kleinmbaum, A. B. (2009). An investigation of why osteopaths choose to leave the profession [Unpublished master's thesis]. Unitec Institute of Technology, New Zealand.
- Kolb, S. (2012). Grounded theory and the constant comparative method: Valid research strategies for educators. *Journal of Emerging Trends in Educational Research and Policy Studies, 3(1)*, 83–86. <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.301.9451&rep=rep1&type=pdf>
- Lalonde, F. (2013). Problem-based learning in osteopathic education. *International Journal of Osteopathic Medicine, 16(4)*, 216–219. <https://doi.org/10.1016/j.ijosm.2013.08.003>
- Longo, W. (2007). Attrition: Our biggest continuing challenge. *The American Journal of Surgery, 194(5)*, 567–575. <https://doi.org/10.1016/j.amjsurg.2007.08.010>
- Marshall, S., Gardner, M., Hughes, C., & Lowery, U. (2016). Attrition from student affairs: Perspectives from those who exited the profession. *Journal of Student Affairs Research and Practice, 53(2)*, 146–159. <https://doi.org/10.1080/19496591.2016.1147359>
- Mirtz, T., Hebert, J., & Wyatt, L. (2010). Attitudes of non-practicing chiropractors: A pilot survey concerning factors related to attrition. *Chiropractic & Osteopathy, 18(1)*, Article 29. <https://doi.org/10.1186/1746-1340-18-29>
- Orrock, P. J. (2017). Developing an evidence base for osteopathic healthcare: An exploration of osteopathic care to inform the design of an appropriate methodology to investigate its effectiveness. <https://researchportal.scu.edu.au/esploro/outputs/doctoral/Developing-an-evidence-base-for-osteopathic-healthcare--an-exploration-of-osteopathic-healthcare-to-inform-the-design-of-an-appropriate-methodology-to-investigate-its-effectiveness/991012820892502368>
- Osmani, M., Weerakkody, V., Hindi, N., & Eldabi, T. (2019). Graduates employability skills: A review of literature against market demand. *Journal of Education for Business, 94(7)*, 423–432. <https://doi.org/10.1080/08832323.2018.1545629>
- Osteopathy Board of Australia (OBA). (2019). *Annual report 2017–18*. Retrieved March 23, 2020, from <http://www.ahpra.gov.au/annualreport/2018/downloads.html#>
- Osteopathy Board AHPRA. (2019). *Capabilities of osteopathic practice*. Retrieved March 23, 2020, from <https://www.osteopathyboard.gov.au/Codes-Guidelines/Capabilities-for-osteopathic-practice.aspx>
- RMIT University. (2019). *Bachelor of Health Science/Bachelor of Applied Science (Osteopathy)*. Retrieved February 23, 2020, from <https://www.rmit.edu.au/study-with-us/levels-of-study/undergraduate-study/bachelor-degrees/bachelor-of-health-science/bachelor-of-applied-science-osteopathy-bp279>
- Robinson, M. (2019). Correlation between learning styles and readiness for self-directed learning among nursing students. *Journal of Health, Medicine and Nursing, 62*. <https://doi.org/10.7176/jhmn/62-15>
- Saha, S., Beach, M., & Cooper, L. (2008). Patient centeredness, cultural competence and healthcare quality. *Journal of the National Medical Association, 100(11)*, 1275–1285. [https://doi.org/10.1016/s0027-9684\(15\)31505-4](https://doi.org/10.1016/s0027-9684(15)31505-4)

- Southern Cross University (SCU). (2019a). *Bachelor of Clinical Sciences (Osteopathic Studies)*. Retrieved February 23, 2020, from <https://www.scu.edu.au/study-at-scu/courses/bachelor-of-clinical-sciences-osteopathic-studies-3007162/>
- Southern Cross University (SCU). (2019b). *Master of Osteopathic Medicine*. Retrieved February 23, 2020, from <https://www.scu.edu.au/study-at-scu/courses/master-of-osteopathic-medicine-1207235/>
- Steel, A., Blaich, R., Sundberg, T., & Adams, J. (2017). The role of osteopathy in clinical care: Broadening the evidence-base. *International Journal of Osteopathic Medicine*, 24, 32–36. <https://doi.org/10.1016/j.ijosm.2017.02.002>
- Victoria University (VU). (2019a). *Bachelor of Science (Osteopathy)*. Retrieved February 23, 2020, from <https://www.vu.edu.au/courses/bachelor-of-science-osteopathy-hbs0>
- Victoria University (VU). (2019b). *Master of Health Science (Osteopathy)*. Retrieved February 23, 2020, from <https://www.vu.edu.au/courses/master-of-health-science-osteopathy-hmho>
- Waggoner, J., Carline, J., & Durning, S. (2016). Is there a consensus on consensus methodology? Descriptions and recommendations for future consensus research. *Academic Medicine*, 91(5), 663–668. <https://doi.org/10.1097/acm.0000000000001092>

Appendices

Appendix A

Course/Program Learning Outcomes for the Osteopathic Universities

B.Health.Sc/B.App.Sc (Osteo): RMIT (2019)

- R1. Provide patient-centred care as a competent, safe primary healthcare professional.
 - R2. Provide osteopathic, musculoskeletal healthcare within a patient-centred, evidence-based framework.
 - R3. Gather and interpret health information and employ clinical reasoning to develop differential diagnoses to inform assessment and management.
 - R4. Effectively communicate with a wide audience (i.e., patients, carers, healthcare professionals and agencies) with respect and sensitivity to socio-cultural diversity, using a variety of media.
 - R5. Manage all aspects of clinical practice to comply with ethical, legal and regulatory standards in an evolving healthcare industry.
 - R6. Work autonomously and collaboratively to lead and/or contribute to interprofessional healthcare partnerships.
 - R7. Develop and implement strategies to meet personal and professional demands as a primary healthcare provider.
 - R8. Develop a commitment to lifelong learning, recognising the historical development and evolution of the profession and how this integrates with contemporary practice.
-

B.Clin.Sc (Osteo)/M.Ost.Med: SCU (2019a/2019b)

- S1. Intellectual rigor: Demonstrate advanced and integrated understanding of a complex body of knowledge in osteopathy; investigate, analyse and synthesise complex information, problems, concepts and theories and generate and evaluate complex ideas and concepts in osteopathic practice.
 - S2. Creativity: Develop innovative and creative responses to health problems and challenges within area of research and/or professional practice. Develop innovative and creative responses to health problems and challenges within osteopathic practice.
 - S3. Ethical practice: Develop an understanding of health practice informed by ethical and legal principles; apply knowledge and skills with high-level personal autonomy and accountability to fulfil primary healthcare responsibilities; apply osteopathic knowledge and skills with creativity and initiative in professional practice in a way that reflects osteopathic philosophy and scope of practice.
 - S4. Knowledge of a discipline: Communicate and demonstrate technical research skills to justify and interpret theoretical propositions, methodologies, conclusions and professional decisions to specialist and non-specialist audiences; demonstrate knowledge of research principles and evidence-based methods applicable to osteopathy and its professional practice.
 - S5. Lifelong learning: Demonstrate mastery of theoretical knowledge, an extended understanding of recent developments in osteopathy and its professional practice and reflect critically on personal and professional osteopathic practice.
 - S6. Communication and social skills: Demonstrate person-oriented care and communication; demonstrate professional relationships and behaviour with healthcare professionals from all disciplines.
 - S7. Cultural competence: Apply an understanding of healthcare provision that is informed by cultural awareness and cultural competence, an international perspective and respect for the rights of all persons; demonstrate an understanding of the physical, social, political, ecological and cultural influences on health and disease that impact health.
-

B.Sc (Osteo)/M.Health.Sc (Osteo): VU (2019a, 2019b)

- V1. Provide patient-specific and evidence informed management based on the interpretation of physical, neurological, orthopaedic and osteopathic examination findings and clinical experience.
- V2. Resolve patient concerns as an ethical, flexible, reflective and consultative practitioner.
- V3. Exhibit professionalism and effective communication when interacting with the patient community, peers and colleagues.
- V4. Interrogate the physical, socioeconomic, psychological, spiritual and cultural factors contributing to a patient's presenting complaint.
- V5. Integrate osteopathic principles and theoretical science concepts, including researched evidence for practice to inform the rationale of osteopathic treatment.
- V6. Implement osteopathic manual techniques to certain patient populations (e.g., elderly, adolescents, athletes) as well as patient groups with specific cultural and religious needs.
- V7. Engage patients and the community by promoting health through effective communication, education and appropriate management based on evidence from osteopathic and public health principles.
- V8. Evaluate patient progress using standardised outcome measures and modify treatment accordingly, considering current available evidence and, when indicated, explore new treatment approaches.
- V9. Critically reflect on theoretical concepts, practical activities and personal and clinical experiences to inform practice and embrace lifelong learning as an osteopath.
-

Appendix B

Course/Program Learning Outcomes for the Osteopathic Universities With Relevant Employability Skills Codes From Employability Skills Index

B.Health.Sc/B.App.Sc (Osteo): RMIT (2019)	
RMIT Program Learning Outcome	Codes
R1. Provide patient-centred care as a competent, safe primary healthcare professional.	1COM 8CRI 9PAO 3PBS 4TNS
R2. Provide osteopathic, musculoskeletal healthcare within a patient-centred, evidence-based framework.	1COM 8CRI 9PAO 3PBS 4TNS
R3. Gather and interpret health information, and employ clinical reasoning to develop differential diagnoses to inform assessment and management.	8CRI 3PBS 4TNS
R4. Effectively communicate with a wide audience (i.e., patients, carers, healthcare professionals and agencies) with respect and sensitivity for sociocultural diversity using a variety of media.	1COM 11CUL 7FLE 4TNS
R5. Manage all aspects of clinical practice to comply with ethical, legal and regulatory standards in an evolving healthcare industry.	10IAE 9PAO
R6. Work autonomously and collaboratively to lead and/or contribute to interprofessional healthcare partnerships.	1COM 10IAE 5LEA 2TWK
R7. Develop and implement strategies to meet personal and professional demands as a primary healthcare provider.	10IAE 9PAO 6SAM
R8. Develop a commitment to lifelong learning, recognising the historical development and evolution of the profession and how this integrates with contemporary practice.	12LLL 9PAO 3PBS

B.Clin.Sc (Osteo)/M.Ost.Med: SCU (2019a, 2019b)		
SCU Course Learning Outcome	Codes	
S1. Intellectual rigor: Demonstrate advanced and integrated understanding of a complex body of knowledge in osteopathy; investigate, analyse and synthesise complex information, problems, concepts and theories and generate and evaluate complex ideas and concepts in osteopathic practice.	8CRI 3PBS	
S2. Creativity: Develop innovative and creative responses to health problems and challenges within area of research and/or professional practice; develop innovative and creative responses to health problems and challenges within osteopathic practice.	1COM 8CRI 10IAE 3PBS 4TNS	
S3. Ethical practice: Develop an understanding of health practice informed by ethical and legal principles; apply knowledge and skills with high level personal autonomy and accountability to fulfil primary healthcare responsibilities; apply osteopathic knowledge and skills with creativity and initiative in professional practice in a way that reflects osteopathic philosophy and scope of practice.	8CRI 10IAE 9PAO 3PBS 4TNS	
S4. Knowledge of a discipline: Communicate and demonstrate technical research skills to justify and interpret theoretical propositions, methodologies, conclusions and professional decisions to specialist and non-specialist audiences; demonstrate knowledge of research principles and evidence-based methods applicable to osteopathy and its professional practice.	1COM 8CRI 7FLE 9PAO 3PBS 4TNS	
S5. Lifelong learning: Demonstrate mastery of theoretical knowledge, an extended understanding of recent developments in osteopathy and its professional practice and reflect critically on personal and professional osteopathic practice.	12LLL 6SAM	
S6. Communication and social skills: Demonstrate person-oriented care and communication; demonstrate professional relationships and behaviour with healthcare professionals from all disciplines.	1COM 7FLE 2TWK	
S7. Cultural competence: Apply an understanding of healthcare provision that is informed by cultural awareness and cultural competence, an international perspective and respect for the rights of all persons; demonstrate an understanding of the physical, social, political, ecological and cultural influences on health and disease that impact health.	8CRI 11CUL 3PBS	

B.Sc (Osteo)/M.Health.Sc (Osteo): VU (2019a, 2019b)	
VU Course Learning Outcome	Codes
V1. Provide patient-specific and evidence-informed management based on the interpretation of physical, neurological, orthopaedic and osteopathic examination findings and clinical experience.	1COM 8CRI 9PAO 3PBS 4TNS
V2. Resolve patient concerns as an ethical, flexible, reflective and consultative practitioner.	1COM 7FLE 3PBS 6SAM
V3. Exhibit professionalism and effective communication when interacting with the patient community, peers and colleagues.	1COM 7FLE 2TWK
V4. Interrogate the physical, socioeconomic, psychological, spiritual and cultural factors contributing to a patient's presenting complaint.	8CRI 3PBS
V5. Integrate osteopathic principles and theoretical science concepts, including researched evidence for practice to inform the rationale of osteopathic treatment.	8CRI 9PAO 3PBS 4TNS
V6. Implement osteopathic manual techniques to certain patient populations (e.g., elderly, adolescents, athletes) as well as patient groups with specific cultural and religious needs.	1COM 8CRI 11CUL 7FLE 9PAO 4TNS
V7. Engage patients and the community by promoting health through effective communication, education and appropriate management based on evidence from osteopathic and public health principles.	1COM 8CRI 5LEA 9PAO
V8. Evaluate patient progress using standardised outcome measures and modify treatment accordingly, considering current available evidence and, when indicated, explore new treatment approaches.	8CRI 7FLE 9PAO 3PBS 4TNS