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Australian Practice-Based Research Network*

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Profile of an Allied Health Clinical Supervision Workforce: Results From a Nationally Representative Australian Practice-Based Research Network

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Abstract

Introduction: Supervision of clinical learners by appropriately qualified and experienced health professionals is paramount to development of the health workforce. There is extensive literature on the qualities and attributes of effective clinical supervisors however we know little about the clinical practice characteristics of our supervision workforces. Our work explores these characteristics in an Australian allied health supervision context.

Methods: Australian osteopaths participating in the professions' practice-based research network were invited to complete a 27-item practice questionnaire. Participants were asked to indicate if they had participated in clinical supervision in the 12 months prior to data collection. Unadjusted and adjusted odds ratios were calculated to identify characteristics associated with involvement in clinical supervision.

Results: 15.1% of respondents indicated being involved in clinical supervision. These practitioners were more likely to be female, involved in university teaching, volunteering as an osteopath, and possess an additional qualification beyond their primary pre-professional degree, compared to their non-supervising counterparts.

Conclusions: Our work highlights a number of characteristics associated with involvement in clinical supervision. Further research is required to explore why females were more likely to participate in clinical supervision, and potentially explore the motivations for volunteering and its association with clinical supervision.

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1. Introduction

Clinical education plays a vital role in the preparation of health professional learners for professional practice and quality patient care. In preparing learners, the supervision provided by experienced and qualified health professionals can take many different forms and is adapted to suit local contexts. Generally, clinical supervision is a developmental process where less experienced clinicians can draw on the knowledge and experience of their supervisors. This process is used to address gaps in the learners' knowledge or skill set, thereby improving their own clinical performance and quality of patient care.¹ In describing supervision we draw on the work of Kilminster, Cottrell, Grant, Jolly² who defined supervision as "... the provision of guidance and feedback on matters of personal, professional and educational development in the context of a trainee's experience of providing safe and appropriate patient care" (p. 3).

Qualified and motivated clinical supervisors are needed to educate and mentor the next generation of clinicians. We also require a better understanding of who it is that is supervising future health professionals to ensure an adequate supply of appropriately qualified supervisors with a range of experience for the benefit of learners. The literature suggests that skills and personal qualities of clinical supervisors, including technical skills, empathy, displaying a positive attitude and the capacity for reflective practice influence student learning³ and positively impact the learning environment. Moreover, clinical supervisors need to ensure that they cultivate their students' capacity to remain adaptive and resourceful throughout their practice life.⁴

Primary motivations to join the clinical supervision workforce include commitment to support the profession, improvement in one's own clinical skill and knowledge, increase work satisfaction, and enjoyment of educating learners.^{3,5–9} However, shortages of clinical supervisors are predicted in the near future for several health professions, including nursing, midwifery and allied health.^{10,11} These potential shortages may negatively impact the number of students who can be accepted into education programs,¹² or limit the type and volume of clinical placement opportunities for learners.

Our knowledge of the clinical supervisor workforce in Australian allied health has typically focused on the tertiary and out-patient environments where supervision forms part of supervisors' employment.¹³ This research suggests that the experience of being a clinical

supervisor differs between different professions, however challenges in finding time for clinical supervision is a consistent theme.¹³ Some allied health education programs also rely on on-campus, student-led clinics¹⁴ or university clinics¹⁵ for clinical education of learners. These learning environments require clinical supervisors to take on a different role compared to supervision in tertiary care. Here, they often supervise multiple learners who provide care to patients but ultimately remain responsible for that care. These clinical supervisors often self-select into clinical education and their profile may be different from those in other supervision environments.

In this work, we present a unique approach to profiling the characteristics of a clinical supervision workforce by drawing data from a practice-based research network (PBRN). PBRNs can be defined as collaborations between community- and ambulatory-based health professionals and academics to foster research, develop practice relevant research questions, and assist in the translation of knowledge to improve clinical care.^{16,17} This systematic approach to engaging clinicians and community-based practice allows for research to take place in environments where research resources, both human and financial, are often limited.¹⁸ However, the outcomes of such research are directly translatable to the community care setting.¹⁶ PBRNs have been used in Australia and internationally across the medical and allied health professions^{16,19–23} and have also been described in the medical education context.²⁴

Our work focuses on the secondary analysis of data from an Australian allied health PBRN to explore the practice profile of those delivering clinical supervision in an allied health profession. We extrapolate why some practitioners engage in clinical education based on their practice characteristics. This data may assist in informing stakeholders about supervisor recruitment to ensure supervision reflects clinical practice and gain an appreciation of some of the motivators for joining this workforce.

2. Methods

2.1. Context

Clinical supervision in osteopathy in Australia is traditionally undertaken in the student-led educational environment at a university-based clinic.^{15,25} More recently, placements have also expanded into community-based and private clinics.²⁶ In Australia,

there are three pre-professional training programs that prepare osteopathy graduates who predominantly enter private clinical practice in the primary and community care setting.²⁰ Unlike other allied health professionals such as physiotherapists, occupational therapists, speech pathologists and podiatrists, Australian osteopaths do not have hospital or public clinic employment or access rights. Most osteopaths who choose to become clinical supervisors take time away from their private clinical practice to participate in clinical supervision in a student-led clinic. To explore the characteristics of this workforce we undertook a secondary analysis of data from the Osteopathy Research and Innovation Network (ORION) Project (<http://www.orion-arccim.com/>), a PBRN for Australian osteopaths.

2.2. Sample

Ethics approval for the project was obtained through the University of Technology Sydney (Approval: 2,014,000,759). All osteopaths who participated in the ORION project provided informed consent to participate. Baseline data and the research design have been described elsewhere.²⁰ All registered Australian osteopaths were invited to complete a practitioner questionnaire between July–December 2016. There were no restrictions on participating in the PBRN. A total of 992 osteopaths completed the practitioner questionnaire (49% of the profession at the time of completion) and the respondents have been shown to be nationally-representative of the wider group of Australian registered osteopaths with respect to age, gender and principal place of practice²⁰ at the time of data collection.

2.3. Questionnaire

Osteopaths completed a questionnaire designed to collect demographic characteristics, practice characteristics, and clinical management of patients via 27 items. With respect to the current work, respondents were asked whether they were involved in clinical supervision in the last 12 months (yes/no). Demographic characteristics included age, gender, the highest level of osteopathy professional qualification, and length of time working in private osteopathy practice. Practitioner were also asked about participation in other aspects of professional engagement (i.e., involvement with a professional association, teaching). Practice characteristics include the average patient care hours and patient visits per week, practice location, health professionals working in same practice location, referral relationships (receiving and sending) with

other health professionals, and diagnostic imaging use. Participants were also asked about their clinical management, including patient conditions, specific population groups seeking care, and various aspects of osteopathy technique use.

2.4. Statistical analyses

Participants were categorised as participating in clinical supervision based on their response (yes/no). Descriptive and inferential statistics were generated for demographic characteristics with effect sizes calculated where relevant. Participants' demographics, practice characteristics, and clinical management were then compared between groups based on their response to this item via independent measures t-tests and chi-square tests. Statistically significant variables were identified ($p < 0.05$). Unadjusted odds ratios (OR) were calculated for each dichotomous questionnaire variable that was statistically significant and 95% confidence intervals were also calculated. Statistically significant variables ($p < 0.20$) were included in a multiple binary logistic regression model. Using a backward stepwise elimination process, characteristics statistically significantly associated with being involved in osteopathy clinical supervision were identified. Alpha was set at 0.05 and adjusted odds ratios were estimated from this regression model. All statistical analyses were performed using JASP (version 0.9.2) and SPSS (version 25) and this model of analysis has been described using the same data set.²⁷

3. Results

Of the 992 respondents, 150 (15.1%) indicated they had participated in clinical supervision in the preceding 12 months. Practitioner characteristics for those who did and did not participate in clinical education in the preceding 12 months are described in [Table 1](#). Unadjusted odds ratios suggest that female practitioners were 60% more likely to participate in clinical supervision compared to their male counterparts (OR 1.6). Australian osteopaths participating in clinical supervision were also 18 times more likely to be involved in university teaching (OR 18.5), and nearly six times more likely to be involved in research (OR 5.6), as well as volunteering as an osteopath (OR 2.5), or involved with an osteopathy professional association (OR 4.2).

Unadjusted odds ratios for other statistically significant practice characteristics are presented in [Table 2](#). Those involved in clinical supervision were more likely to send (OR 1.7) and receive referrals (OR

Table 1
Practitioner characteristics of Australian osteopaths based on their involvement in clinical supervision over the preceding 12 months.

	'Yes' (n = 150)	'No' (n = 842)	p-value	OR [95%CI]
Gender				
Male	72 (48.0%)	504 (59.9%)		
Female	78 (52.0%)	338 (40.1%)	<0.01	1.6 [1.4, 2.3]
Age (years)				
Mean (\pm SD)	41.1 (\pm 10.1)	37.5 (\pm 10.9)	<0.01 ^a	–
Years in clinical practice				
Mean (\pm SD)	14.5 (\pm 8.3)	10.9 (\pm 9.0)	<0.01 ^b	–
Patient care hours per week				
Mean (\pm SD)	26.2 (\pm 12.1)	28.3 (\pm 12.1)	0.06	–
Patient visits per week				
Mean (\pm SD)	34.4 (\pm 17.2)	36.8 (\pm 18.8)	0.18	–
Qualification (n, %)				
Diploma	13 (8.7%)	49 (5.8%)	0.12	–
Advanced Diploma	2 (1.3%)	7 (0.8%)		
Bachelor degree	36 (24.0%)	182 (21.6%)		
Master's degree	92 (61.3%)	589 (70.0%)		
PhD	2 (1.3%)	3 (0.4%)		
Other	5 (3.3%)	12 (1.4%)		
Additional qualification*	6 (4.0%)	9 (1.1%)	0.02	3.8 [1.3, 11.0]
Involved in as an osteopath ('yes')				
University teaching	74 (49.3%)	42 (5.0%)	<0.01	18.5 [11.9, 28.9]
Professional organisations	40 (26.7%)	67 (8.0%)	<0.01	4.2 [2.7, 6.5]
Research	25 (16.7%)	29 (3.4%)	<0.01	5.6 [3.2, 9.9]
Volunteer	43 (28.7%)	116 (13.8%)	<0.01	2.5 [1.7, 3.7]

* qualification beyond primary osteopathy qualification; ^a $d = 0.34$, ^b $d = 0.40$; percentages reflect the outcome variable by column.

1.6) through specialist medical practitioners. Additionally, these practitioners were more likely to receive referrals from other osteopaths (OR 2.0), podiatrists (OR 1.6), acupuncturists (OR 1.5) and naturopaths (OR 1.8).

Clinical management characteristics are presented in Table 3. Those engaged in clinical supervision were more likely to treat those under the age of 4 (OR 2.1) and up to age 18 (OR 1.6). These practitioners were also more likely to see extended referral to orthopaedic surgeons (OR 1.7) and sports medicine specialists (OR 1.9).

Adjusted odds ratios produced in the backward regression model (Table 4) suggested that those involved in university teaching (OR 22.7) and volunteering (OR 2.1) were more likely to participate in clinical supervision. Participants were also more likely to participate in clinical supervision if they possessed another qualification in addition to their osteopathy qualification (OR 8.1). Those receiving referrals from podiatrists (OR 2.7) were also more likely to be involved in clinical supervision.

4. Discussion

This study utilised data from an Australian osteopathy PBRN to profile the professions' clinical

supervision workforce in Australia. There is little published information on this workforce globally and our work illuminates the practice characteristics of these clinical supervisors. The clinical supervision workforce described above operates in a different way from many of the larger health professions. They actively choose to participate in clinical supervision, do not work in the public health or tertiary hospital environment, and take time away from their private clinical practice to supervise students. Consequently, data on how these clinical supervisors practice clinically may identify characteristics to assist with workforce development. This data may also inform other professions who utilise university clinics or are considering their establishment.

The older age of osteopaths participating in clinical supervision is unsurprising. Pre-professional training providers will typically only engage osteopaths in supervision after having a number of years of clinical experience in private practice, generally a minimum of three years or more.²⁵ The mean years' experience is likely to be of benefit for learners, who are potentially able to draw on the practice of experienced clinicians to inform their own reasoning and practice. It is also of benefit for the university to engage experienced supervisors to improve the learning experience for the

Table 2

Practice characteristics of Australian osteopaths based on their involvement in clinical supervision over the preceding 12 months.

	'Yes' (n = 150)	'No' (n = 842)	p-value	OR [95% CI]
Practice location				
Urban practice	127 (84.7%)	693 (82.3%)	0.48	—
More than one practice location	51 (34.0%)	296 (35.2%)	0.78	—
Co-located with other health professionals ('yes')				
Osteopath	98 (65.3%)	545 (64.7%)	0.88	—
General Practitioner	60 (7.1%)	12 (8.0%)	0.70	—
Specialist Medical Practitioner	6 (4.0%)	25 (3.0%)	0.50	—
Podiatrist	26 (17.3%)	121 (14.4%)	0.35	—
Physiotherapist	21 (14.0%)	123 (14.6%)	0.84	—
Exercise Physiologist	20 (13.3%)	104 (12.4%)	0.74	—
Occupational Therapist	3 (2.0%)	16 (1.9%)	0.93	—
Psychologist	35 (23.3%)	156 (18.5%)	0.17	—
Massage Therapist	80 (53.3%)	421 (50.0%)	0.45	—
Acupuncturist	34 (22.7%)	154 (18.3%)	0.21	—
Naturopath	34 (22.7%)	159 (18.9%)	0.28	—
Dietician	12 (8.0%)	60 (7.1%)	0.70	—
Nutritionist	14 (9.3%)	64 (7.6%)	0.47	—
Send referrals to other health professionals ('yes')				
Osteopath	80 (53.3%)	426 (50.6%)	0.53	—
General Practitioner	138 (92.0%)	740 (87.9%)	0.14	—
Specialist Medical Practitioner	84 (56.0%)	359 (42.6%)	<0.01	1.7 [1.2, 2.4]
Podiatrist	104 (69.3%)	547 (65.0%)	0.30	—
Physiotherapist	56 (37.3%)	275 (32.7%)	0.26	—
Exercise Physiologist	58 (38.7%)	340 (40.4%)	0.70	—
Occupational Therapist	19 (12.7%)	87 (10.3%)	0.39	—
Psychologist	61 (40.7%)	288 (34.2%)	0.13	—
Massage Therapist	109 (72.7%)	562 (66.7%)	0.15	—
Acupuncturist	72 (48.0%)	379 (45.0%)	0.50	—
Naturopath	76 (50.7%)	401 (47.6%)	0.49	—
Dietician	27 (18.0%)	140 (16.6%)	0.70	—
Nutritionist	27 (18.0%)	140 (16.6%)	0.89	—
Receive referrals to other health professionals ('yes')				
Osteopath	112 (74.7%)	502 (59.6%)	<0.01	2.0 [1.4, 2.9]
General Practitioner	137 (91.3%)	749 (89.0%)	0.38	—
Specialist Medical Practitioner	49 (32.7%)	188 (22.3%)	<0.01	1.7 [1.2, 2.5]
Podiatrist	86 (57.3%)	385 (45.7%)	<0.01	1.6 [1.1, 2.2]
Physiotherapist	47 (31.3%)	219 (26.0%)	0.17	—
Exercise Physiologist	45 (30.0%)	213 (25.3%)	0.23	—
Occupational Therapist	13 (8.7%)	48 (5.7%)	0.16	—
Psychologist	25 (16.7%)	129 (15.3%)	0.67	—
Massage Therapist	123 (82.0%)	631 (74.9%)	0.06	—
Acupuncturist	69 (46.0%)	301 (35.7%)	0.02	1.5 [1.1, 2.1]
Naturopath	78 (52.0%)	322 (38.2%)	<0.01	1.8 [1.2, 2.5]
Dietician	9 (6.0%)	30 (3.6%)	0.16	—
Nutritionist	12 (8.0%)	43 (5.1%)	0.15	—
Diagnostic imaging				
Referral for imaging ('often')	15 (10.0%)	58 (6.9%)	0.18	—
Investigation of unknown pathologies	110 (73.3%)	632 (75.1%)	0.65	—
Investigation of suspected diagnosis	120 (80.0%)	715 (84.9%)	0.13	—
Investigation of potential fractures	124 (82.7%)	626 (74.3%)	0.03	1.6 [1.0, 2.6]
Rule out risk factors prior to treatment	53 (35.3%)	219 (26.0%)	0.02	1.5 [1.1, 2.2]
General screening of the spine	5 (3.3%)	27 (3.2%)	0.94	—
Patient assessment ('yes')				
Orthopaedic testing	147 (98.0%)	821 (97.5%)	0.71	—
Clinical assessment algorithm	70 (46.7%)	398 (47.3%)	0.89	—
Neurological testing	141 (94.0%)	777 (92.3%)	0.46	—

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Table 2 (continued)

	'Yes' (n = 150)	'No' (n = 842)	p-value	OR [95% CI]
Screening questionnaire	104 (69.3%)	529 (62.8%)	0.13	–
Cranial nerve testing	114 (76.0%)	558 (66.3%)	0.02	1.6 [1.1, 2.4]

Percentages reflect the outcome variable by column.

Table 3

Clinical management characteristics of Australian osteopaths based on their involvement in clinical supervision over the preceding 12 months.

	'Yes' (n = 150)	'No' (n = 842)	p-value	OR [95%CI]
Discuss with patients ('often')				
Diet/nutrition	64 (42.7%)	311 (37.0%)	0.19	–
Smoking and drug use	30 (20.0%)	149 (17.7%)	0.51	–
Physical activity	140 (93.3%)	746 (88.7%)	0.09	–
Occupation Health & Safety	76 (51.0%)	430 (51.2%)	0.97	–
Pain counselling	24 (16.0%)	242 (28.8%)	<0.01	0.5 [0.3, 0.7]
Stress	78 (52.0%)	411 (49.0%)	0.50	–
Nutritional supplements	44 (29.3%)	208 (24.7%)	0.23	–
Medication	59 (39.6%)	332 (39.5%)	0.97	–
Patient presentations ('often')				
Neck pain	146 (97.3%)	825 (98.1%)	0.54	–
Thoracic pain	138 (92.0%)	771 (91.7%)	0.89	–
Low back pain	146 (97.3%)	831 (98.9%)	0.11	–
Hip musculoskeletal pain	115 (77.2%)	629 (74.8%)	0.53	–
Knee musculoskeletal pain	87 (58.0%)	404 (48.2%)	0.03	1.5 [1.1, 2.1]
Ankle musculoskeletal pain	63 (42.0%)	270 (32.2%)	0.02	1.5 [1.1, 2.2]
Foot musculoskeletal pain	58 (38.7%)	236 (28.1%)	<0.01	1.6 [1.1, 2.3]
Shoulder musculoskeletal pain	123 (82.0%)	678 (80.8%)	0.73	–
Elbow musculoskeletal pain	48 (32.0%)	203 (24.3%)	0.04	1.5 [1.0, 2.1]
Wrist musculoskeletal pain	35 (23.3%)	153 (18.2%)	0.14	–
Hand musculoskeletal pain	28 (18.7%)	93 (11.1%)	0.01	1.8 [1.2, 2.9]
Postural disorders	96 (64.4%)	579 (68.9%)	0.27	–
Degenerative spine conditions	95 (63.3%)	504 (60.1%)	0.45	–
Headache disorders	130 (86.7%)	762 (90.7%)	0.13	–
Migraine disorders	57 (38.0%)	343 (40.9%)	0.50	–
Spine health maintenance	61 (40.7%)	397 (47.4%)	0.13	–
Chronic or persistent pain	102 (68.0%)	528 (62.9%)	0.23	–
Tendinopathies	66 (44.0%)	344 (41.0%)	0.49	–
Temporomandibular joint disorders	32 (21.3%)	151 (18.0%)	0.33	–
Non-musculoskeletal disorders	27 (18.2%)	99 (11.9%)	0.03	1.6 [1.0, 2.6]
Patient groups ('often')				
Up to 3 years of age	38 (25.3%)	118 (14.1%)	<0.01	2.1 [1.3, 3.1]
4–18 years of age	53 (35.3%)	217 (25.8%)	0.02	1.6 [1.1, 2.7]
Over 65 years of age	88 (58.7%)	484 (57.6%)	0.80	–
Aboriginal & Torres Strait Islander peoples	2 (1.3%)	5 (0.6%)	0.32	–
Pregnancy	60 (40.0%)	284 (33.8%)	0.14	–
Non-English speaking	4 (2.7%)	29 (3.5%)	0.63	–
Sport injuries	77 (51.3%)	424 (50.5%)	0.85	–
Worker injury (compensable)	19 (12.8%)	84 (10.0%)	0.31	–
Work injury (non-compensable)	45 (30.0%)	296 (35.2%)	0.22	–
Traffic injury (compensable)	9 (6.0%)	45 (5.4%)	0.74	–
Traffic injury (non-compensable)	18 (12.0%)	96 (11.5%)	0.85	–
Post-surgery	17 (11.4%)	62 (7.4%)	0.09	–
Techniques used ('often')				
Counterstrain	63 (42.3%)	357 (42.4%)	0.97	–
Muscle energy technique	111 (74.0%)	677 (80.5%)	0.07	–
High-velocity, low-amplitude manipulation	93 (62.0%)	539 (64.1%)	0.62	–

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Table 3 (continued)

	'Yes' (n = 150)	'No' (n = 842)	p-value	OR [95%CI]
Joint manipulation	70 (46.7%)	323 (38.5%)	0.06	–
Soft tissue technique	121 (80.7%)	727 (86.5%)	0.06	–
Myofascial release	90 (60.0%)	522 (62.1%)	0.62	–
Visceral techniques	22 (14.7%)	76 (9.0%)	0.03	1.7 [1.0, 2.9]
Lymphatic pump	18 (12.0%)	66 (7.8%)	0.09	–
Autonomic balancing	31 (20.7%)	126 (15.0%)	0.08	–
Biodynamics	28 (18.7%)	127 (15.1%)	0.27	–
Functional technique	45 (30.0%)	225 (26.8%)	0.41	–
Balanced ligamentous tension	50 (33.3%)	299 (35.6%)	0.60	–
Chapman's reflexes	4 (2.7%)	20 (2.4%)	0.83	–
Trigger point therapy	26 (17.3%)	232 (27.6%)	<0.01	0.5 [0.3, 0.9]
Osteopathy in the Cranial Field	40 (26.7%)	193 (23.0%)	0.32	–
Facilitated positional release	25 (16.7%)	141 (16.8%)	0.96	–
Dry needling	28 (18.7%)	206 (24.5%)	0.12	–
Exercise prescription	110 (73.3%)	623 (74.2%)	0.83	–
Shockwave therapy	3 (2.0%)	15 (1.8%)	0.74	–
Ultrasound	4 (2.7%)	23 (2.7%)	0.95	–
TENS	3 (2.0%)	16 (1.9%)	0.93	–
Instrument manipulation	2 (1.3%)	1 (0.1%)	0.17	–
Instrument soft-tissue	2 (1.3%)	10 (1.2%)	0.88	–
Sport taping	26 (17.3%)	107 (12.7%)	0.34	–
Expanded practice scope ('definitely')				
Prescribing rights	39 (26.0%)	218 (25.9%)	0.98	–
Referral rights to orthopaedic surgeon	119 (79.3%)	584 (69.4%)	0.01	1.7 [1.1, 2.6]
Referral rights to paediatrician	90 (60.0%)	450 (53.5%)	0.14	–
Referral rights to sports medicine specialist	130 (87.2%)	660 (78.5%)	0.01	1.9 [1.1, 3.1]
Referral rights to rheumatologist	94 (63.7%)	535 (63.6%)	0.82	–
Referral rights to other medical specialist	1 (0.7%)	0	0.15	–
Expanded diagnostic imaging rights	119 (79.3%)	703 (83.6%)	0.20	–
Research in practice ('strongly agree')				
Useful to help patients understand the benefits of osteopathy	69 (46.0%)	374 (44.4%)	0.72	–
Useful to help GPs and other conventional health professionals understand the role of osteopathy	106 (73.1%)	564 (69.9%)	0.43	–
Useful to provide scientific evidence for what I do as an osteopath	84 (58.7%)	431 (54.1%)	0.31	–
Irrelevant to the professional development of osteopathy in Australia	86 (60.1%)	477 (60.1%)	0.98	–
Impact of research on practice ('high impact')	32 (21.3%)	207 (24.6%)	0.39	–

Percentages reflect the outcome variable by column.

students. Although the clinical supervision cohort is clinically experienced, the questionnaire did not explore how long they had participated in clinical supervision and is an area for future research.

Table 4

Significant practice characteristics of Australian osteopaths based on their involvement in clinical supervision over the preceding 12 months.

	Odds Ratio	95% Confidence Interval	p-value
Years in clinical practice	1.1	1.1, 1.2	0.02
Involved in university teaching	22.4	11.8, 37.4	<0.01
Involved in volunteering	2.2	1.2, 4.0	<0.01
Receive referrals from podiatrists	2.1	1.2, 3.4	<0.01
Up to 3 years of age	2.1	1.1, 3.8	0.02
Referral to sports physician	2.5	1.1, 5.5	0.02

Female osteopaths were more likely to participate in osteopathy clinical supervision compared to their male counterparts. This result is consistent with a number of authors in Australian physiotherapy clinical supervision^{13,28,29} who demonstrated predominant female practitioner populations participating in supervision. The reason for more females participating in supervision is a valuable topic for exploration but could be related to factors such as carer and family responsibilities, reduced physical demands with supervision, and financial considerations. Additional demographic differences that appear to be associated with participation in clinical supervision include possessing a qualification beyond their pre-professional training. These clinical supervisors may be more engaged with education and professional development,

and other aspects of osteopathy practice. Having these additional qualifications could be of value to the learners through exposure to additional aspects of practice and patient care although such an assertion requires additional investigation.

Role modelling is consistently identified as a key component of effective clinical teaching^{3,30–32} and the current work may help to illuminate the clinical practices and characteristics that may be modelled. Australian osteopaths engaging in clinical supervision were more likely to engage in referrals with other health professionals, including specialist medical practitioners and podiatrists. Practices related to diagnosis (e.g., cranial nerve examination) were also up to 60% more likely to be reported by those engaging in clinical supervision. Together, these are positive practice and clinical behaviours that may come across into the clinical supervision setting. Australian osteopaths involved in clinical supervision appear to be engaging in referrals with a range of health professionals and this finding is encouraging. Multidisciplinary practice is required for effective patient care, and Australian osteopaths generally participate through referrals with other health professionals.^{33,34} It may be that osteopaths involved in clinical supervision model this practice for their learners however additional research is required to explore such an assertion.

Osteopaths appear to participate in clinical supervision because they are broadly interested in education of student osteopaths. This assertion is supported by the large odds ratio with respect to participating in university teaching and is consistent with the motivations of other allied health clinical supervisors.³ The opportunity to use this teaching and supervision as part of their own professional development may also be a motivator. It may be that these practitioners are combining clinical supervision with university teaching to maximise their time at the university campus. In osteopathy, the teaching and clinical supervision locations are typically on the same campus. There is no literature describing whether these clinical supervisors have undertaken professional education in clinical supervision prior to or while participating in clinical supervision. Undertaking such courses has been shown to positively impact teaching behaviours and to improve the educational experience of the learner.³⁵ Additional research could explore the professional development needs of this workforce.

The choice to participate in clinical supervision also appears to be related to willingness to participate in voluntary work. This finding is of interest given the multidimensional nature of volunteering with respect

to psychosocial and demographic influences.³⁶ These authors identified that older age, identifying as female and possessing a higher education level are associated with volunteering. Of note is that these factors were identified as being associated with clinical supervision in our work however whether this is for the same reasons as the work by Matsuba, Hart, Atkins³⁶ requires additional exploration. We are not able to detect the variables that may influence the relationship between clinical supervision and volunteering, and given the reported complexity of the relationship it may be difficult to do so.³⁷ However, a future line of enquiry could explore supervisor personality traits. Scheepers, Lombarts, van Aken, Heineman, Arah³⁸ suggested that extroversion was associated with overall clinical teaching effectiveness and this trait has also been identified in those who are more likely to volunteer. Educators who display this trait are also reported to be more engaged in teaching activities.³⁹ Such personality traits may also account for the strong relationship between university teaching and clinical supervision participation in our work.

Limitations of this study are related to the self-report and cross-sectional nature of the data collection, particularly response and social desirability bias. Another limitation is that the definition of clinical supervision did not explicitly state that it had to occur in a tertiary setting only, which is where osteopathy clinical education occurs. How respondents interpreted the clinical supervision item, particularly what they consider constitutes supervision, will likely influence individual responses. From the questionnaire, we were not able to ascertain the precise location of the clinical education (i.e., private practice, university clinic, community-based clinic). There may be differences in practice profile depending upon where a practitioner chooses to work as a clinical supervisor. Further, practitioners may have not been participating in clinical supervision at the time of survey administration but did so in the previous twelve months, in which case the 15.1% of respondents who have participated in clinical supervision would be an under-estimate. Under-estimation could also apply to other items on the questionnaire. Dichotomisation of the ORION questionnaire items with frequency or Likert-type responses reduces the nuance in the data and may influence the outcomes reported here. The Australian osteopathy profession has continued to grow since these data were collected as part of the PBRN.⁴⁰ There may have been a shift in the practice characteristics associated with participating in clinical supervision in the intervening period. This may limit the

generalisability of the results within the osteopathy profession, but still inform the wider health professions education community.

Additional research is required to further explore this workforce to understand how we can engage practitioners in clinical supervision, not only at our university clinics but also through private clinical practice placements.²⁶ The latter may assist with developing quality placement opportunities that reflect the graduate practice environment. There is also a need to develop a greater understanding of how practitioners can develop as clinical supervisors in these contexts (e.g., through additional formal qualifications, informal mentors), as well as the influence of supervision on patient outcomes and satisfaction.⁴¹

5. Conclusion

Our work highlights that approximately 15% of the Australian osteopathy profession choose to participate in clinical supervision. The Australian osteopathy profession is at a unique juncture where there are almost as many students training to be osteopaths as there are registered practitioners and a shortage of clinical supervisors may ensue. Using data from a nationally-representative PBRN provides a unique perspective on the characteristics of practitioners who chose to participate in clinical supervision and informs our understanding of recruitment and training needs of the clinical supervisor workforce, who are required to prepare osteopathic students for the changing roles of allied health professionals,⁴² the increasing demand for collaborative interprofessional practice, and emerging technologies in healthcare.⁴³

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References

- Kilminster S, Jolly B. Effective supervision in clinical practice settings: a literature review. *Med Educ.* 2000;34(10):827–840. <https://doi.org/10.1046/j.1365-2923.2000.00758.x>.
- Kilminster S, Cottrell D, Grant J, Jolly B. AMEE Guide No. 27: effective educational and clinical supervision. *Med Teach.* 2007;29(1):2–19. <https://doi.org/10.1080/01421590701210907>.
- Gibson SJ, Porter J, Anderson A, Bryce A, Dart J, Kellow N, et al. Clinical educators' skills and qualities in allied health: a systematic review. *Med Educ.* 2019;53(5):432–442. <https://doi.org/10.1111/medu.13782>.
- Lovell B. Emergent core values: the student perspective. *Clin Teach.* 2016;13. <https://doi.org/10.1111/tct.12473>.
- Bennett R. Clinical education: perceived abilities/qualities of clinical educators and team supervision of students. *Physiotherapy.* 2003;89(7):432–440.
- Bing-You RG, Harvey BJ. Factors related to residents' desire and ability to teach in the clinical setting. *Teach Learn Med.* 1991;3(2):95–100.
- Currens JAB, Bithell CP. Clinical education: listening to different perspectives. *Physiotherapy.* 2000;86(12):645–653.
- Krueger PM, Dane P, Slocum P, Kimmelman M. Osteopathic clinical training in three universities. *Acad Med.* 2009;84(6):712–717.
- Sevenhuysen SL, Haines T. The slave of duty: why clinical educators across the continuum of care provide clinical education in physiotherapy. *Hong Kong Physiother J.* 2011;29(2):64–70. <https://doi.org/10.1016/j.hkpj.2011.06.002>.
- Woodall L, Smith G, Garr D, Hopla D, Kern D. Can state-supported interprofessional coalitions cure preceptor shortages? *J Am Acad Phys Assist.* 2018;31(6). <https://doi.org/10.1097/01.JAA.0000533667.10945>.
- Lazarus J. Precepting 101: teaching strategies and tips for success for preceptors. *J Midwifery Wom Health.* 2016;61(S1):11–21. <https://doi.org/10.1111/jmwh.12520>.
- Germano E, Schorn MN, Phillippi JC, Schuling K. Factors that influence midwives to serve as preceptors: an American College of Nurse-Midwives survey. *J Midwifery Wom Health.* 2014;59(2):167–175. <https://doi.org/10.1111/jmwh.12175>.
- Snowdon DA, Millard G, Taylor NF. Effectiveness of clinical supervision of physiotherapists: a survey. *Aust Health Rev.* 2015;39(2):190–196. <https://doi.org/10.1071/AH14020>.
- Moore K, Bacon R, Bevitt T, Bialocerkowski A, Ciccone N, Haworth N, et al. Report: the university health clinic: definition, educational practices and outcomes. *Focus on Health Prof Educ: A Multi-discip J.* 2018;19(2):1–13.
- Allan J, O'Meara P, Pope R, Higgs J, Kent J. The role of context in establishing university clinics. *Health Soc Care Community.* 2011;19(2):217–224. <https://doi.org/10.1111/j.1365-2524.2010.00971.x>.
- Pirotta M, Temple-Smith M. Practice-based research networks. *Aust Fam Physician.* 2017;46(10):793–795.
- Mold JW, Peterson KA. Primary care practice-based research networks: working at the interface between research and quality improvement. *Ann Fam Med.* 2005;3(suppl 1):S12–S20.
- Lee H, Peng W, Steel A, Reid R, Sibbritt D, Adams J. Complementary and alternative medicine research in practice-based

- research networks: a critical review. *Compl Ther Med*. 2019;43:7–19. <https://doi.org/10.1016/j.ctim.2018.12.023>.
19. Adams J, Lauche R, Peng W, Steel A, Amorin-Woods L, Sibbritt D. A workforce survey of Australian chiropractic: the profile and practice features of a nationally representative sample of 2,005 chiropractors. *BMC Compl Alternative Med*. 2017;17(1):14. <https://doi.org/10.1186/s12906-016-1542-x>.
 20. 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>.
 21. Hickner J, Green LA. Practice-based research networks (PBRNs) in the United States: growing and still going after all these years. *J Am Board Fam Med*. 2015;28(5):541–545. <https://doi.org/10.3122/jabfm.2015.05.150227>.
 22. Selby K, Cornuz J, Senn N. Establishment of a representative practice-based research network (PBRN) for the monitoring of primary care in Switzerland. *J Am Board Fam Med*. 2015;28(5):673–675. <https://doi.org/10.3122/jabfm.2015.05.150110>.
 23. Gilbert GH, Williams OD, Rindal DB, Pihlstrom D, Benjamin P, Wallace M, et al. The creation and development of the dental practice-based research network. *J Am Dent Assoc*. 2008;139(1):74–81.
 24. Schwartz A, Young R, Hicks PJ, Appd Learn F. Medical education practice-based research networks: facilitating collaborative research. *Med Teach*. 2016;38(1):64–74. <https://doi.org/10.3109/0142159X.2014.970991>.
 25. Vaughan B, Macfarlane C, Florentine P. Clinical education in the osteopathy program at Victoria University. *Int J Osteopath Med*. 2014;17(3):199–205. <https://doi.org/10.1016/j.ijosm.2013.10.010>.
 26. Moore K, Field BJ. Enhancing clinical education in the private practice setting: a case study in osteopathy. *Int J Osteopath Med*. 2017;23:42–50. <https://doi.org/10.1016/j.ijosm.2016.06.003>.
 27. Steel A, Vaughan B, Orrock P, Peng W, Fleischmann M, Grace S, et al. Prevalence and profile of Australian osteopaths treating older people. *Compl Ther Med*. 2019;43:125–130. <https://doi.org/10.1016/j.ctim.2019.01.013>.
 28. Martin P, Baldock K, Kumar S, Lizarondo L. Factors that contribute to high-quality clinical supervision of the rural allied health workforce: lessons from the coalface. *Aust Health Rev*. 2018;46(3):682–688. <https://doi.org/10.1071/AH17258>.
 29. Gardner MJ, McKinstry C, Perrin B. Effectiveness of allied health clinical supervision a cross-sectional survey of supervisees. *J Allied Health*. 2018;47(2):126–132.
 30. Jochemsen-van der Leeuw HGAR, van Dijk N, van Etten-Jamaludin FS, Wieringa-de Waard M. The attributes of the clinical trainer as a role model: a systematic review. *Acad Med*. 2013;88(1):26–34. <https://doi.org/10.1097/ACM.0b013e318276d070>.
 31. Cruess SR, Cruess RL, Steinert Y. Role modelling—making the most of a powerful teaching strategy. *BMJ*. 2008;336(7646):718–721.
 32. Knight LV, Bligh J. Physicians' perceptions of clinical teaching: a qualitative analysis in the context of change. *Adv Health Sci Educ Theory Pract*. 2006;11(3):221–234.
 33. Wardle JL, Sibbritt DW, Adams J. Referrals to chiropractors and osteopaths: a survey of general practitioners in rural and regional New South Wales, Australia. *Chiropr Man Ther*. 2013;21(1):5. <https://doi.org/10.1186/2045-709x-21-5>.
 34. Burke SR, Myers R, Zhang AL. A profile of osteopathic practice in Australia 2010–2011: a cross sectional survey. *BMC Musculoskel Disord*. 2013;14(1):227. <https://doi.org/10.1186/1471-2474-14-227>.
 35. Steinert Y, Mann K, Anderson B, Centeno A, Naismith L, Prideaux D, et al. A systematic review of faculty development initiatives designed to enhance teaching effectiveness: a 10-year update: BEME Guide No. 40. *Med Teach*. 2016;38(8):769–786. <https://doi.org/10.1080/0142159X.2016.1181851>.
 36. Matsuba MK, Hart D, Atkins R. Psychological and social-structural influences on commitment to volunteering. *J Res Pers*. 2007;41(4):889–907. <https://doi.org/10.1016/j.jrp.2006.11.001>.
 37. Hustinx L, Cnaan RA, Handy F. Navigating theories of volunteering: a hybrid map for a complex phenomenon. *J Theor Soc Behav*. 2010;40(4):410–434.
 38. Scheepers RA, Lombarts KM, van Aken MA, Heineman MJ, Arah OA. Personality traits affect teaching performance of attending physicians: results of a multi-center observational study. *PloS One*. 2014;9(5), e98107. <https://doi.org/10.1371/journal.pone.0098107>.
 39. Scheepers RA, Arah OA, Heineman MJ, Lombarts KM. How personality traits affect clinician-supervisors' work engagement and subsequently their teaching performance in residency training. *Med Teach*. 2016;38(11):1105–1111. <https://doi.org/10.3109/0142159X.2016.1170774>.
 40. Australian Health Practitioner Regulation Agency. *Statistics*; 2019. <https://www.osteopathyboard.gov.au/About/Statistics.aspx>. Accessed October 13, 2019.
 41. Snowdon DA, Leggat SG, Taylor NF. Does clinical supervision of healthcare professionals improve effectiveness of care and patient experience? A systematic review. *BMC Health Serv Res*. 2017;17(1):786. <https://doi.org/10.1186/s12913-017-2739-5>.
 42. Romig BD, Tucker AW, Hewitt AM, O'Sullivan Maillet J. The future of clinical education: using the delphi technique to study allied health deans' perspectives on definitions and goals. *J Allied Health*. 2016;45(4):243–250. Published 2016/12/05.
 43. O'Brien CW, Anderson R, Ayzenberg B, Chute P, Farnsworth T, McLaughlin R, et al. Employers' viewpoint on clinical education. *J Allied Health*. 2017;46(3):131–137.