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The naturopathic profession in Australia: a secondary analysis of the Practitioner Research and Collaboration Initiative (PRACI)

Abstract

Introduction: This study provides the first detailed empirical examination of the naturopathic profession and naturopathic practice in Australia.

Methods: Naturopaths from the Practitioner Research And Collaboration Initiative (PRACI) were invited to participate in an online workforce survey.

Results: The baseline survey was completed by 281 naturopaths and 155 (55.2%) completed the second survey. Respondents were predominantly female (86.7%), with a mean age of 45.5 years (SD 10.4). A diverse range of clinical interest topics were disclosed; most frequent were digestive (84.0%) and women's (79.4%) health. Diet/nutrition (91.1%), sleep (90.2%), stress management (85.3%) and physical activity/fitness (79.4%) were commonly discussed during consultation.

Conclusion: Although respondents reported a varied scope of practice, there was a notable emphasis on lifestyle prescriptions. Given lifestyle diseases are the leading cause of death in Australia, a more in-depth examination of the preparedness of the naturopathy workforce to integrate into community-based health care teams is now warranted.

Keywords: Naturopathy; health workforce; survey; practice-based research network

Introduction

Naturopathy is a traditional system of medicine originating from Europe but practiced in 98 countries [1]. The practice of naturopathy is defined by a philosophical approach that has been codified into seven principles (see Figure 1). International research conducted by the World Naturopathic Federation (WNF) has identified a range of treatments that are taught in the majority of naturopathic programs throughout the world including clinical nutrition (e.g. nutritional products), applied nutrition (e.g. dietary prescription), botanical medicine and hydrotherapy [2]. A similar list of common treatment categories prescribed by naturopaths was identified in a recent international survey of naturopathic practice, although lifestyle behaviour changes were also reported in this study at a rate comparable with other treatment types [3]. Globally, naturopathic practitioners have a varied scope of practice as determined by the regulatory and legislative landscape of their practice location [4]; they also treat patients from diverse age groups and with a variety of health conditions, including those contributing to the global burden of disease [3].

In Australia, 6.2% of the population consult a naturopath, with more frequent use reported among individuals with diabetes, mental health disorders or respiratory disease [5]. Clinical research suggests naturopathic care may benefit populations with various health conditions, including cardiovascular disease and associated risk factors, diabetes, musculoskeletal disorders, multiple sclerosis, depression, anxiety, menopause, asthma, and polycystic ovarian syndrome [6]. Naturopathic consultations are often characterised by extended consultation times [7] and, in line with the stated naturopathic principles [8], patient experiences of naturopathic care are generally reported as empowering and patient-centred [9]. These features of naturopathic practice align with recommended best practice for chronic disease management and may explain the sustained improvement in health status among patients with chronic health conditions who access naturopathic care [10].

The Australian naturopathic profession is self-regulated with professional associations and independent regulatory bodies sharing responsibility for managing education and practice standards [11, 12]. Based on National Population Census data, there are an estimated 3000 naturopaths in Australia [13]; although, this figure is likely an underestimation [14], partly due to the absence of statutory registration. Despite lobbying for statutory registration for more than 20 years [15-17], the exclusion of naturopaths from the current regulatory structure of the National Registration and Accreditation Scheme (NRAS) has been identified by the grassroots of the profession as affecting their ability to effectively collaborate with other health professionals providing care to their patients [18-20]. Absence of regulation also has been argued to undermine the profession's ability to set firm minimum education standards [21], with a minimum Bachelor degree qualification only recently

established despite the availability of degree courses for more than 20 years [22]. Most recently, the Australian government conducted a review of evidence associated with natural therapies eligible for private health insurance rebates; the review concluded the transferability of evidence for naturopathic care was limited by the absence of statutory registration [23, 24].

Previous health workforce research has examined naturopaths in Australia. These studies have been of limited benefit however as naturopath workforce data has been combined with other health professions [14, 25-27]. Only one study in 2004 provides preliminary details about Australian naturopaths in clinical practice [28]. This study found naturopaths dedicate more of their practice time to herbal and nutritional medicine than other treatments and use physical examination more often than pathology testing as a diagnostic tool. This 2004 study also found naturopaths' views on potential government regulation of practice were divided, although most impacts from such regulation were viewed as positive [28]. Since 2004, no further research has provided a detailed description of the Australian naturopathic profession. In response, this study provides the first detailed description of the personal and practice characteristics of naturopaths in Australia.

Methods

Aim

This study aims to describe the characteristics of naturopaths and naturopathy practice in Australia.

Design

National cross-sectional workforce survey.

Participants

This study sampled all 281 members of PRACI that identified as having a qualification in naturopathy.

Instrument

PRACI is a national multi-profession practice-based research network in Australia established in 2014 [29]. The network comprises 1053 members from 14 different professions [30]. The PRACI membership database was established through a universal baseline survey completed by all members [29]. A follow-up survey was subsequently administered, which targeted members based on professional clusters (e.g. ingestive medicine, manual therapies). Responses from the baseline and follow-up surveys were linked and are referred to hereafter as the workforce survey.

PRACI members with a qualification in naturopathy were invited to participate in the workforce survey via electronic direct mail between September and November 2016. Another invitation was administered between December 2017 and January 2018 following a second PRACI recruitment round

in 2017. The survey was administered via the online platform Surveygizmo. The baseline workforce survey and second profession-specific survey comprised 19 items each, and were divided into four domains: practitioner characteristics, practice characteristics, practice behaviours, and perceptions for future practice. The surveys can be accessed via the PRACI website (www.praci.com.au).

Practitioner and practice characteristics

Practitioners were asked to indicate their age, gender, and number of years since receiving their first professional qualification. Survey items also asked practitioners to indicate areas of special clinical interest or focus, any other clinical qualifications they held, and their occupational roles. Practitioners were also invited to provide the average number of days/hours per week they were in practice, as well as the average number of clients seen per week and new clients seen per month. In addition, practitioners were asked to indicate whether they were in solo clinical practice or shared their clinical location with other health professionals.

Practice behaviours

Practitioners were asked to indicate the frequency with which they discussed specific topics with their clients. Items further explored practice behaviours by asking practitioners to indicate the frequency with which they treated specific populations and conditions, prescribed various treatments, and employed specific diagnostic techniques within their clinical practice.

Perceived future needs for the profession

Practitioners were invited to indicate their perceptions regarding the need for the professions' access to specific health infrastructure and services in the future.

Data analysis

Descriptive data analytic techniques were employed using Stata 14.1. Frequencies and percentages were used for categorical variables. Continuous variables were analysed to determine the mean, standard deviation, minimum and maximum. Items with single response options were treated as binary variables and non-responses were coded as 'no'. Where survey items included multiple response options, missing responses were excluded from the analysis. Participants' weekly and annual gross income from clinical practice was calculated by multiplying the average reported hours per week in clinical practice by the average hourly rate charged for clinical services.

Ethics

PRACI is approved by the Human Research Ethics Committee (HREC) of the [redacted for blinded review] and the Endeavour College of Natural Health (#2014033).

Results

The baseline survey was completed by 281 naturopaths and the second profession-specific survey was completed by 155 of these, representing a response rate of 55.2% (155/281 naturopath members). Respondents were predominantly female (86.7%) with a mean age of 45.5 years (SD 10.4) (see Table 1). The majority of respondents held an Advanced Diploma (49.1%) or Bachelor (45.6%) qualification, as well as qualifications in Western herbal medicine (37.4%), nutrition (37.0%) and massage (34.9%). The number of years since respondents had completed their first qualification was fairly evenly distributed ranging between 17.4% (15 to 19 years) and 24.9% (20 years or more). Respondents had been in full-time practice for an average of 6.6 years (SD 10.2), and part-time practice for 8.2 years [SD 31.1].

Respondents reported working an average of 3.6 days (SD 3.8) and 17.6 hours (SD 18.2) per week in clinic, in which they treated 12.2 clients per week (SD 10.2) inclusive of 26.6 new clients per month (SD 125.1). The mean hourly rate reported for client consultations was AUD104.40 (SD 35.1) (Table 1). Based on this practice information, gross weekly income derived from clinical practice for Australian naturopaths is estimated at AUD1837.44 (min:\$1551.55, max:\$2150.28), which is equivalent to AUD95k per annum. Most participants were in solo practice exclusively (45.7%) or worked solo in at least one clinical practice location (26.8%). Online consultations were reportedly conducted by 61.3% of respondents, and a similar proportion (61.0%) reported conducting phone consultations. Of the respondents engaged in non-clinical roles, those employed in a sales position reported the highest proportion of their work week dedicated to this role (retail: 48.2%; sales representative: 52.1%).

Table 2 presents the clinical interest topics and diagnostic techniques used by respondents in clinical practice. A diverse range of clinical interest topics were reported, with two-thirds or more of respondents indicating an interest in digestive conditions (84.0%), women's health (79.4%), general health (76.2%), allergy (70.8%), endocrine health (70.5%), and mental health (68.0%). Gerontology was identified as a clinical interest area by the least number of respondents (26.0%).

Respondents indicated using a diverse range of diagnostic techniques with the vast majority reporting pathology tests (90.2%) and patient symptom diaries (87.7%) (Table 2). Also common, but not as frequent, were nail inspection (57.1%), pre-intake forms (54.7%), observation (48.7%), and health history (47.7%). Least frequently used diagnostic techniques were energy-testing machines (6.9%), kinesiology (11.0%) and live blood analysis (11.1%).

The populations treated by respondents varied (see Table 3). The population identified most frequently as being treated 'often' were individuals aged 36 to 64 years (88.5%). Adolescents (13 to 18 years; 45.2%) and older people (65 years or over; 34.4%) were also treated 'often' by a moderate

number of respondents. More specialised populations were treated less frequently, with 44.9% indicating they never treated veterans and 44.0% never treating Aboriginal and Torres Strait Islander people.

The characteristics of clinical consultations are presented in Table 4. The majority of respondents 'often' discussed diet and nutrition (91.1%), sleep (90.2%), stress management (85.3%) and physical activity and fitness (79.4%) with their patients. To a lesser extent, respondents also discussed with their patients, medication and pharmaceuticals (60.0%), substance use (58.1%) and counselling and mental health (57.0%). Occupational health and safety (11.8%) and vaccination (8.4%) were most frequently identified as 'never' covered in discussions with patients.

The conditions respondents 'often' treated in their practice were fatigue (95.0%), digestive disorders (83.7%), anxiety/depression (77.4%), irritable bowel syndrome (66.9%), menstrual disorders (61.0%) and sleep disorders (60.5%) (Table 4). Least frequently treated conditions were asthma (8.3%), drug/alcohol addiction (4.1%) and dementia/Alzheimer's disease (2.5%). Participants indicated they 'often' prescribed lifestyle changes (86.8%), liquid herbal medicines (69.2%) and dietary changes (62.8%) in their clinical consultations. While herbal tablets (74.1%) and nutritional supplements (79.3%) were also often prescribed, it is important to note that only 54 participants responded to this question. Also 'often' prescribed to patients were relaxation exercises (44.2%), exercise prescription (42.5%), and meditation (41.3%). The prescriptions most frequently reported as 'never' prescribed were colonics (67.5%), ear candling (58.7%), specific homeopathic prescribing (55.0%), hydrotherapy (45.0%), netipots (43.8%) and commercial homeopathic remedies (30.5%).

Respondents believed profession-specific post-graduate specialisation degrees (81.7%) and integration with conventional health providers (80.7%) were 'definitely' needed for the future of naturopathy. Statutory regulation was reported as 'definitely' needed by 65.4% of respondents, with 24.2% indicating this was 'maybe' needed. Medicare rebates were perceived as 'definitely' (71.4%) or 'maybe' (17.7%) needed by the majority of respondents; although, of all factors listed, Medicare rebates had the highest proportion of respondents indicating it was not needed (5.9%).

Discussion

This study describes the characteristics of the naturopath workforce and naturopathic practice in Australia. Our findings, in support of existing international research [3], indicate Australian naturopaths regularly treat health conditions that align with several national health priority areas including mental health, cardiovascular health, arthritis, musculoskeletal conditions, and obesity [31]. Importantly, evidence from previous clinical research suggests naturopathic care may offer benefit to patients with health conditions within these and other priority areas [6]. Our study also suggests

naturopaths address health behaviours (i.e. dietary practices, physical activity, alcohol consumption and illicit drug use) that are crucial to improving population health in Australia [31]. These findings are significant given that individuals in Australia who consult a naturopath report improvements in wellbeing (55.6%) and long-term health conditions (38.9%) [5]. Furthermore, patients accessing naturopathic care in Australia have reported experiencing person-centred care, which appears to be more pronounced among patients with chronic diagnoses [9]. The accumulation of this current evidence suggests naturopaths may play an important role in chronic disease management in Australia, and thus, may help address the objectives of the National Strategic Framework for Chronic Conditions [32]. Notwithstanding, this topic requires closer examination using targeted health services research before the true role, value and impact of naturopaths on the health of the population are understood.

Our study findings indicate that participating naturopaths primarily employ four categories of treatments: lifestyle prescription, herbal medicines (tablets and liquids), nutritional supplements, and specific dietary practices. Two of these practices – herbal and nutritional medicine – are described in Australian naturopathic workforce research from 2004 [28]; although, this previous study did not include dietary or lifestyle prescription as response options, so the prevalence of these additional treatment categories among this previous research is uncertain. Our results also align with findings from an international survey of naturopathic practice [3] and a survey of naturopathic educational institutions [2], suggesting these four treatment categories may reflect the core therapeutic tools of contemporary naturopathic practice.

The treatment category most frequently reported by respondents was lifestyle prescriptions. While lifestyle modification is understood to be crucial for chronic disease management [33], it is not readily practiced in primary care settings. According to the findings of a general practice survey in Australia, while GPs and nurse practitioners frequently report advising high-risk patients to increase physical activity, the provision of dietary advice and referrals were reported at much lower rates [34]. The reason for this implementation gap in Australian primary care, at least as perceived by GPs, may be attributed to barriers such as patient reluctance and ambivalence, consultation time and reduced access to allied health [35]. However, observational research in naturopathic clinical environments has found individuals with type 2 diabetes who have received naturopathic care were able to sustain the motivation to change their lifestyle 12 months after initiating treatment [10]; a finding that may be explained by the high levels of empowerment reported by individuals following consultation with a naturopath [9].

Herbal and nutritional products were also frequently prescribed by respondents; this finding raises important questions that require further examination. Most significant of these is patient safety due to potential herb-drug and nutrient-drug interactions. While the inclusion of pharmacological interaction content in naturopathic clinical texts [36-38] suggests naturopaths may be attentive to this risk, other factors may hinder the practicalities of managing a patients' safety. One such barrier is patient disclosure. Approximately two-thirds of patients using an ingestive complementary medicine, such as herbal or nutritional products, do not tell their medical doctor about their use [39]. While data on the disclosure of pharmaceutical products to naturopaths is limited, there is undoubtedly a risk of interaction if multiple prescribing clinicians involved in the patient's care are not informed of all treatments.

The study findings indicate that while Australian naturopaths treat a diverse range of patients, they primarily treat individuals aged 36 to 64 years; this aligns with previous research profiling Australian users of naturopathy and related health care [40]. However, the low frequency with which specialised populations – elite athletes, veterans, Aboriginal and Torres Strait Islander peoples, non-English-speaking ethnic groups – were treated by study participants is also notable. The reason for this disparity is unclear. In some instances, such as elite athletes, it may be due to the relatively low proportion of this population in Australia. However, there are approximately 641 000 living Australian veterans and 165 000 that have health complaints recognised by the Department of Veterans Affairs that are eligible for treatment funded by the Department of Veteran's Affairs (DVA) [41]. This funding model for veteran's health may contribute to the low number of veteran patients seen by Australian naturopaths as naturopathic consultations are not currently eligible for DVA reimbursements; further, the fee-for-service model of naturopathic practice may not necessarily appeal to veterans who have access to significant funding for their healthcare and reduced employment due to their complex health needs [41]. In other words, there may be challenges for naturopaths claiming DVA costs and DVA recipients financing such treatments costs (i.e. paying expenses upfront and claiming reimbursements later). The cost of naturopathic care may be a possible barrier to indigenous Australians using naturopathic services, although the reasons for not consulting naturopaths are likely more complex; poor cultural sensitivity, inadequate transport, and lack of Indigenous staff (both health and operational) could be important contributing factors [42]. Given the significant health needs of both indigenous [42] and veteran [41] populations, the Australian naturopathic profession may benefit from rethinking its standard clinical model and explore opportunities, such as group or home visits [43], to provide care to underserved populations.

Respondent perceptions of current and future needs for Australian naturopathy do not appear to align with existing health infrastructure and services. For example, most participants indicated a definite

need for profession-specific postgraduate specialisation degrees. However, the Australian naturopathic profession has struggled against external interests to establish the Bachelor degree as a minimum education standard, despite it being offered for 20 years [21] and being advocated for by the profession [22]. This has limited the ability for educational institutions to invest in the development and delivery of profession-specific postgraduate study opportunities for naturopaths.

While three quarters of respondents were in solo practice, most welcomed the integration of naturopathic practitioners with conventional health providers and settings. This perceived need aligns with recommendations from the World Health Organisation (WHO) [44] and national guidelines for primary care (particularly within the context of chronic disease management). However, previous research has identified a number of barriers to naturopathy being effectively integrated into the Australian health system [18, 19]. One factor that naturopaths have linked to both the naturopathic educational landscape and their capacity for integration with conventional health providers is statutory registration [18, 19, 21]. Many hospitals and medical centres are currently unable to accommodate a naturopath due to the lack of regulation with the standard regulatory body, the Australian Health Practitioner Regulation Agency.

Previous qualitative research has found naturopaths in clinical practice perceive statutory registration as a solution to many of their current challenges [20], with more than two-thirds of our study participants indicating a definite need for statutory registration. A further 24% argued there 'maybe' a need for registration, possibly reflecting wider frustrations with the current regulatory system in place within Australia [45] as well as a recent review of the NRAS [46]. Previous research [28] suggests naturopaths believe positive changes would emerge from registration, such as improved professional status, defined scope of practice and education standards, access to scheduled herbs, and access to post-graduate education and research infrastructure. They were most unsure about the impact of registration on practitioner income, litigation, and patient costs. However, further research is needed to better understand the explicit reasons for naturopaths feeling uncertain about the need for statutory registration.

Limitations

The limitations of this study should be considered when interpreting the significance of the findings. The study is based on self-report and, as such, the findings may not reflect actual practice behaviours of naturopaths. Similarly, the retrospective study design exposes the study to recall bias. Further, the inclusion of PRACI members in the sampling frame may have resulted in sampling bias. Notwithstanding, the demographic characteristics of participating naturopaths (i.e. age and sex) did closely approximate that of naturopaths in Australia more generally [13]. Some of the data were

drawn from a follow-up PRACI survey, which was not completed by all respondents involved in the baseline survey; this may have introduced responder bias. Despite these limitations, the study findings provide the most contemporary picture of naturopathic practice in Australia.

Conclusions

Australian naturopaths make up a substantial component of community-based health care provision in Australia and regularly treat health conditions that align with several national health priority areas, including mental health, cardiovascular health, arthritis and musculoskeletal conditions, and obesity. Respondents also reported a varied scope of practice, with a notable focus on lifestyle prescriptions. Given that lifestyle diseases are the leading cause of death in Australia, consideration should be given to integrating naturopaths into community-based health care teams. A more in-depth examination of the preparedness of the naturopathy workforce for such integration is now warranted.

Ethics approval and consent to participate

Ethics approval was granted from the Human Research Ethics Committees of Endeavour College of Natural Health (#2014033) and the University of Technology Sydney (#2014000279).

Consent for publication

No consent for publication was required for this analysis.

Availability of data and materials

The data that support the findings of this study are available from the PRACI Steering Committee but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of the PRACI Steering Committee.

Competing interests

The authors have no competing interests to declare.

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Authors' contributions

[redacted for blinded review]

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References

1. Organization, W.H., *WHO global report on traditional and complementary medicine 2019*, in *WHO global report on traditional and complementary medicine 2019*. 2019.
2. World Naturopathic Federation Roots Committee, *WNF - Naturopathic Roots Report*. 2016, World Naturopathic Federation,: Toronto, Canada.
3. Steel, A., et al., *Overview of international naturopathic practice and patient characteristics: results from a cross-sectional study in 14 countries*. *BMC Complementary Medicine and Therapies*, 2020. **20**(1): p. 59.
4. World Naturopathic Federation, *Global Naturopathic Regulation*. 2018, World Naturopathic Federation: Toronto, Ontario.
5. McIntyre, E., et al., *Consultations with Naturopaths and Western Herbalists: Prevalence of Use and Characteristics of Users in Australia*. *The Journal of Alternative Complementary Medicine*, 2018. **25**(2).
6. Myers, S. and V. Vigar, *The State of the Evidence for Whole-System Multi-Modality Naturopathic Medicine: A Systematic Scoping Review*. *The Journal of Alternative & Complementary Medicine*, 2019. **25**(2).
7. Foley, H. and A. Steel, *Patient perceptions of clinical care in complementary medicine: A systematic review of the consultation experience*. *Patient Educ Couns*, 2016. **100**: p. 212-23.
8. Foley, H. and A. Steel, *The Nexus Between Patient-Centered Care and Complementary Medicine: Allies in the Era of Chronic Disease?* *J Altern Complement Med*, 2017. **23**: p. 158-63.
9. Foley, H. and A. Steel, *Patient perceptions of patient-centred care, empathy and empowerment in complementary medicine clinical practice: A cross-sectional study*. *Advances in Integrative Medicine*, 2017. **4**: p. 22-30.
10. Bradley, R., et al., *Adjunctive naturopathic care for type 2 diabetes: patient-reported and clinical outcomes after one year*. *BMC Complementary Alternative Medicine*, 2012. **12**(1): p. 44.
11. Australian Register of Naturopaths and Herbalists. *ARONAH Documents*. 2017 [cited 2017 6 Sep].
12. Naturopaths and Herbalists Association of Australia. *Education*. 2017 [cited 2017 6 Sep].
13. Leach, M.J., *Profile of the complementary and alternative medicine workforce across Australia, New Zealand, Canada, United States and United Kingdom*. *Complementary therapies in medicine*, 2013. **21**(4): p. 364-378.
14. Steel, A., et al., *The Australian Complementary Medicine workforce: a profile of 1,306 practitioners from the PRACI study*. *The Journal of Alternative & Complementary Medicine*, 2017. **In Press**.
15. Wardle, J., *The National Registration and Accreditation Scheme: What Would Inclusion Mean for Naturopathy and Western Herbal Medicine?: Part I-the Legislation*. *Australian Journal of Medical Herbalism*, 2010. **22**(4): p. 113.
16. Wardle, J., *The National Registration and Accreditation Scheme: What Would Inclusion Mean for Naturopathy and Western Herbal Medicine?: Part II: Practice Implications*. *Australian Journal of Medical Herbalism*, 2011. **23**(1): p. 18.
17. Wardle, J., A. Steel, and E. McIntyre, *Independent registration for naturopaths and herbalists in Australia: the coming of age of an ancient profession in contemporary healthcare*. *Aust J Herbal Med*, 2013. **25**(3).
18. Steel, A., et al., *Providing maternity care from outside the system: perspectives of complementary medicine practitioners*. *Journal of Interprofessional Care*, 2020: p. 1-9.
19. Wardle, J., et al., *Collaborating with medicine? Perceptions of Australian naturopaths on integrating within the conventional medical system*. *Journal of interprofessional care*, 2017. **31**(6): p. 734-743.

20. Wardle, J.L., et al. *Current challenges and future directions for naturopathic medicine in Australia: a qualitative examination of perceptions and experiences from grassroots practice*. BMC Complement Altern Med, 2013. **13**, 15.
21. Wardle, J., A. Steel, and J. Adams, *A review of tensions and risks in naturopathic education and training in Australia: a need for regulation*. J Altern Complement Med, 2012. **18**(4): p. 363-70.
22. Breakspear, I., *Training the next generation: Advanced diplomas or degrees?* Australian Journal of Herbal Medicine, 2013. **25**(4): p. 168-171.
23. Leach, M.J. and A. Steel, *The potential downstream effects of proposed changes in Australian private health insurance policy: The case for naturopathy*. Advances in integrative medicine, 2018. **5**(2): p. 48-51.
24. Wardle, J., *The Australian government review of natural therapies for private health insurance rebates: what does it say and what does it mean?* Advances in Integrative Medicine, 2016. **3**(1): p. 3-10.
25. Leach, M.J., E. McIntyre, and J. Frawley, *Characteristics of the Australian complementary and alternative medicine (CAM) workforce*. Australian Journal of Herbal Medicine, 2014. **26**(2): p. 58.
26. Grace, S., S. Rogers, and S. Edey, *The Natural Medicine Workforce in Australia: A national survey - part 2*. Journal of the Australian Traditional-Medicine Society, 2013. **19**(2): p. 79-86.
27. Casey, M.G., J. Adams, and D. Sibbritt, *An examination of the prescription and dispensing of medicines by Western herbal therapists: A national survey in Australia*. Complement Ther Med, 2007. **15**(1): p. 13-20.
28. Bensoussan, A., et al., *Naturopathic and Western Herbal Medicine practice in Australia - a workforce survey*. Complement Ther Med, 2004. **12**: p. 17-27.
29. Steel, A., J. Adams, and D. Sibbritt, *Developing a multi-modality complementary medicine practice-based research network: The PRACI project*. Advances in Integrative Medicine, 2014. **1**(3): p. 113-118.
30. Steel, A., et al., *An Overview of the Practitioner Research and Collaboration Initiative (PRACI): a practice-based research network for complementary medicine*. BMC complementary and alternative medicine, 2017. **17**(1): p. 87.
31. Australian Institute of Health and Welfare, *Australia's Health - 2018*. 2018, AIHW: Canberra.
32. Leach, M.J., *Using role substitution to address the health workforce shortage and to facilitate integration?* Journal of Complementary and Integrative Medicine, 2012. **9**(1).
33. Kushner, R.F. and K.W. Sorensen, *Lifestyle medicine: the future of chronic disease management*. Current Opinion in Endocrinology, Diabetes and Obesity, 2013. **20**(5): p. 389-395.
34. Passey, M., et al., *Assessment and management of lifestyle risk factors in rural and urban general practices in Australia*. Australian Journal of Primary Health, 2010. **16**(1): p. 81-86.
35. Howes, F., E. Warnecke, and M. Nelson, *Barriers to lifestyle risk factor assessment and management in hypertension: a qualitative study of Australian general practitioners*. Journal of Human Hypertension, 2013. **27**(8): p. 474-478.
36. Wardle, J. and J. Sarris, eds. *Clinical naturopathy: an evidence-based guide to practice*. 3rd ed. 2019, Elsevier Health Sciences: Chatswood, NSW.
37. Stargrove, M.B., J. Treasure, and D.L. McKee, *Herb, nutrient, and drug interactions: clinical implications and therapeutic strategies*. 2008, Missouri: Mosby Elsevier.
38. Braun, L. and M.M. Cohen, eds. *Herbs and Natural Supplements: An evidence-based guide*. 4th ed. Vol. 1. 2014.
39. Foley, H., et al., *Disclosure of complementary medicine use to medical providers: a systematic review and meta-analysis*. Scientific reports, 2019. **9**(1): p. 1573.

40. Reid, R., et al., *Complementary medicine use by the Australian population: a critical mixed studies systematic review of utilisation, perceptions and factors associated with use*. BMC Complementary and Alternative Medicine, 2016. **16**(1): p. 176.
41. Australian Institute of Health and Welfare, *A profile of Australia's veterans*. 2018, AIHW: Canberra.
42. Anikeeva, O., R. Katterl, and P. Bywood, *The closing the gap initiative: Successes and ongoing challenges for divisions of general practice*. Australian Family Physician, 2012. **41**(7): p. 523-7.
43. Vaughan, E.M., et al., *A narrative review of diabetes group visits in low-income and underserved settings*. Current diabetes reviews, 2019. **15**(5): p. 372-381.
44. World Health Organisation. *Traditional, complementary and integrative medicine*. 2019 [cited 2019 6 Nov]; Available from: <https://www.who.int/traditional-complementary-integrative-medicine/about/en/>.
45. Pierce, S.M., *Expectations and experience of complaints and notifications about registered health professionals in the Australian national and NSW regulatory systems: A comparative study of complaints and notifications from the perspective of 'system users'*, in *School of Public Health*. 2017, University of Sydney: Sydney. p. 364.
46. Snowball, K., *Independent Review of the National Registration and Accreditation Scheme for health professions*. 2014, Australian Health Ministers' Advisory Council: Canberra.

Table 1: Personal and practice characteristics

Personal Characteristics	All participants
Gender (n=278)	N (%)
<i>Female</i>	241 (86.7)
<i>Male</i>	37 (13.3)
	Mean (SD; min, max)
Age (n=277)	45.5 (10.4; 44.3, 46.7)
Qualifications	N (%)
<i>Certificate (n=281)</i>	10 (3.6)
<i>Diploma (n=281)</i>	31 (11.0)
<i>Advanced diploma (n=281)</i>	138 (49.1)
<i>Bachelor (n=281)</i>	128 (45.6)
Other clinical qualifications	
<i>Western herbal medicine (n=281)</i>	105 (37.4)
<i>Nutrition (n=281)</i>	104 (37.0)
<i>Massage (n=281)</i>	98 (34.9)
<i>Non-complementary medicine clinical qualification (n=281)</i>	61 (21.7)
<i>Homeopathy (n=281)</i>	48 (17.1)
<i>Aromatherapy (n=281)</i>	19 (6.8)
<i>Acupuncture (n=281)</i>	14 (5.0)
<i>Kinesiology (n=281)</i>	13 (4.6)
<i>Reflexology (n=281)</i>	13 (4.6)
<i>Bowen therapy (n=281)</i>	11 (3.9)
<i>Chinese herbal medicine (n=281)</i>	6 (2.1)
<i>Ayurveda (n=281)</i>	3 (1.1)
Years since first qualification (n=281)	
<i>Less than 5 years</i>	56 (19.9)
<i>5 to 9 years</i>	56 (19.9)
<i>10 to 14 years</i>	50 (17.8)
<i>15 to 19 years</i>	49 (17.4)
<i>20 years or more</i>	70 (24.9)
	Mean (SD; min, max)
Years in full time practice (n=272)	6.6 (10.2; 5.4, 7.8)
Years in part time practice (n=275)	8.2 (31.1; 4.5, 11.9)
Practice characteristics	
Average days per week in practice (n=277)	3.6 (3.8; 3.1, 4.0)
Average hours per week in practice (n=272)	17.6 (18.2; 15.5, 19.8)
Average clients per week (n=273)	12.2 (10.2; 10.9, 13.4)
Average new clients per month (n=273)	26.6 (125.1; 11.7, 41.5)
Hourly rate (n=267)	104.4 (35.1; 100.1, 108.6)
Solo or group practice arrangement (n=280)	N (%)
<i>Solo in at least one practice</i>	75 (26.8)
<i>Solo in all practices</i>	128 (45.7)
<i>No solo practices</i>	77 (27.5)
Online consultations (n=119)	73 (61.3)
Phone consultations (n=123)	75 (61.0)
Percentage of work week in non-clinical roles	Mean (SD; min, max)
<i>Retail (n=34)</i>	48.2 (24.1; 10, 100)
<i>Technical expert (n=15)</i>	33.0 (29.6; 0.3, 90)
<i>Sales representative (n=7)</i>	52.1 (27.1; 5, 80)

<i>Lecturer (n=53)</i>	31.0 (25.4; 1, 100)
<i>Researcher (n=28)</i>	33.5 (27.8; 5, 80)
<i>Group education (n=35)</i>	15.3 (18.2; 2, 100)

Table 2: Clinical interest topics and diagnostic techniques used in clinical practice (n=281)

Clinical interest topics	N (%)
<i>Digestive conditions (n=281)</i>	236 (84.0)
<i>Women's health (n=281)</i>	223 (79.4)
<i>General health (n=281)</i>	214 (76.2)
<i>Allergy (n=281)</i>	199 (70.8)
<i>Endocrine (n=281)</i>	198 (70.5)
<i>Mental health (n=281)</i>	191 (68.0)
<i>Weight management (n=281)</i>	184 (65.5)
<i>Complex conditions (n=281)</i>	180 (64.1)
<i>Skin (n=281)</i>	177 (63.0)
<i>Cardiovascular disease (n=281)</i>	152 (54.1)
<i>Men's health (n=281)</i>	145 (51.6)
<i>Respiratory (n=281)</i>	145 (51.6)
<i>Musculoskeletal health (n=281)</i>	143 (50.9)
<i>Pain (n=281)</i>	142 (50.5)
<i>Pediatrics (n=281)</i>	139 (49.5)
<i>Ear-nose-throat (n=281)</i>	132 (47.0)
<i>Oncology (n=281)</i>	116 (41.3)
<i>Renal (n=281)</i>	113 (40.2)
<i>Sports performance and recovery (n=281)</i>	109 (38.8)
<i>Gerontology (n=281)</i>	73 (26.0)
Diagnostic techniques	
<i>Pathology tests (n=153)</i>	138 (90.2)
<i>Patient symptom diary (n=155)</i>	136 (87.7)
<i>Nail inspection (n=149)</i>	85 (57.1)
<i>Pre-intake form (n=150)</i>	82 (54.7)
<i>Observation (n=152)</i>	74 (48.7)
<i>Health history (n=153)</i>	73 (47.7)
<i>Patient-reported outcome measure (n=147)</i>	64 (43.5)
<i>Physical examination and palpation (n=151)</i>	65 (43.1)
<i>Iridology (n=147)</i>	63 (42.9)
<i>Inspection (n=151)</i>	64 (42.4)
<i>Clinical information from another health professional (n=149)</i>	63 (42.3)
<i>Tongue diagnosis (n=149)</i>	63 (42.3)
<i>Validated assessment instruments (n=150)</i>	52 (34.7)
<i>Hair testing (n=147)</i>	41 (27.9)
<i>Postural/Structural assessment (n=149)</i>	36 (24.2)
<i>Radiological tests (n=147)</i>	34 (23.1)
<i>Bio-impedance analysis (n=144)</i>	19 (13.2)
<i>Live blood analysis (n=144)</i>	16 (11.1)
<i>Kinesiology (n=145)</i>	16 (11.0)
<i>Energy-testing machine (n=144)</i>	10 (6.9)

Table 3: Frequency with which specific populations are treated by Australian naturopaths

Population	Never	Rarely	Sometimes	Often
Infant/toddler (up to 3 years) (n=121)	11 (9.1)	57 (47.1)	39 (32.2)	14 (11.6)
Children (3 to 12 years) (n=156)	6 (3.9)	49 (31.4)	82 (52.6)	19 (12.2)
Adolescents (13 to 18 years) (n=157)	3 (1.9)	30 (19.1)	53 (33.8)	71 (45.2)
Middle age (36 to 64 years) (n=157)	0 (0.0)	0 (0.0)	18 (11.5)	139 (88.5)
Older people (65 years or over)	2 (1.3)	31 (19.8)	70 (44.6)	54 (34.4)
Elite athletes (n=155)	61 (39.4)	71 (45.8)	19 (12.3)	4 (2.6)
Veterans (n=156)	70 (44.9)	60 (38.5)	23 (14.7)	3 (1.9)
Aboriginal and Torres Strait Islander people (n=157)	69 (44.0)	74 (47.1)	14 (8.9)	0 (0.0)
Pregnant women (n=157)	8 (5.1)	39 (24.8)	72 (45.9)	38 (24.2)
Non-English-speaking ethnic group(s) (n=155)	58 (37.4)	63 (40.7)	29 (18.7)	5 (3.2)

Table 4: Characteristics of clinical consultations

	Never	Rarely	Sometimes	Often
Topics discussed with patients				
<i>Diet and nutrition (n=157)</i>	3 (1.9)	1 (0.6)	10 (6.4)	143 (91.1)
<i>Sleep (n=123)</i>	0 (0.0)	0 (0.0)	12 (9.8)	111 (90.2)
<i>Stress management (n=156)</i>	0 (0.0)	2 (1.3)	21 (13.5)	133 (85.3)
<i>Physical activity and fitness (n=155)</i>	0 (0.0)	4 (2.6)	28 (18.1)	123 (79.4)
<i>Medication/Pharmaceuticals (n=155)</i>	7 (4.5)	8 (5.2)	47 (30.3)	93 (60.0)
<i>Substance use (tobacco, alcohol, illicit drugs) (n=155)</i>	2 (1.3)	14 (9.0)	49 (31.6)	90 (58.1)
<i>Counseling and Mental Health (n=121)</i>	0 (0.0)	7 (5.8)	45 (37.2)	69 (57.0)
<i>Occupational health and safety (n=153)</i>	18 (11.8)	60 (39.2)	55 (36.0)	20 (13.1)
<i>Surgical interventions (n=119)</i>	9 (7.6)	48 (40.3)	52 (43.7)	10 (8.4)
<i>Vaccination (n=119)</i>	10 (8.4)	65 (54.6)	37 (31.1)	7 (5.9)
Conditions treated				
<i>Fatigue (n=121)</i>	0 (0.0)	0 (0.0)	6 (5.0)	115 (95.0)
<i>Digestive disorders (n=123)</i>	0 (0.0)	0 (0.0)	20 (16.3)	103 (83.7)
<i>Anxiety/depression (n=155)</i>	2 (1.3)	6 (3.9)	27 (17.4)	120 (77.4)
<i>Irritable bowel syndrome (n=121)</i>	0 (0.0)	5 (4.1)	35 (28.9)	81 (66.9)
<i>Menstrual disorders (n=123)</i>	0 (0.0)	9 (7.3)	39 (31.7)	75 (61.0)
<i>Sleep disorders (n=157)</i>	2 (1.3)	7 (4.5)	53 (33.8)	95 (60.5)
<i>Thyroid complaints (n=120)</i>	2 (1.7)	13 (10.8)	49 (40.8)	56 (46.7)
<i>Chronic pain (n=121)</i>	1 (0.8)	17 (14.1)	56 (46.3)	47 (38.8)
<i>Headache/migraine (n=155)</i>	0 (0.0)	7 (4.5)	88 (56.8)	60 (38.7)
<i>Recurrent infections (n=120)</i>	0 (0.0)	10 (8.3)	65 (54.2)	45 (37.5)
<i>Arthritis (n=154)</i>	4 (2.6)	24 (15.6)	78 (50.7)	48 (31.2)
<i>Eczema/psoriasis (n=122)</i>	0 (0.0)	25 (20.5)	70 (57.4)	27 (22.1)
<i>Hayfever (n=120)</i>	1 (0.8)	19 (15.8)	77 (64.2)	23 (19.2)
<i>ADHD/Autism/Learning difficulties (n=122)</i>	14 (11.5)	50 (41.0)	40 (32.8)	18 (14.6)
<i>Asthma (n=121)</i>	4 (3.3)	54 (44.6)	53 (43.8)	10 (8.3)
<i>Drug/alcohol addiction (n=123)</i>	18 (14.6)	58 (47.2)	42 (34.2)	5 (4.1)
<i>Dementia/Alzheimer's (n=121)</i>	38 (31.4)	64 (52.9)	16 (13.2)	3 (2.5)
Treatments prescribed to patients				
<i>Lifestyle prescription (n=121)</i>	0 (0.0)	1 (0.8)	15 (12.4)	105 (86.8)
<i>Herbal tablets (n=54)</i>	0 (0.0)	5 (9.3)	9 (16.7)	40 (74.1)
<i>Nutritional supplements (n=54)</i>	1 (1.9)	0 (0.0)	10 (18.5)	43 (79.3)
<i>Liquid herbal medicines (n=120)</i>	4 (3.3)	10 (8.3)	23 (19.2)	83 (69.2)
<i>Specific diets (n=121)</i>	2 (1.7)	10 (8.3)	33 (27.3)	76 (62.8)
<i>Relaxation exercises (n=120)</i>	3 (2.5)	13 (10.8)	51 (42.5)	53 (44.2)
<i>Exercise prescription (n=120)</i>	2 (1.7)	19 (15.8)	48 (40.0)	51 (42.5)
<i>Meditation (n=121)</i>	3 (2.5)	10 (8.3)	58 (47.9)	50 (41.3)
<i>Compound nutritionals (n=120)</i>	16 (13.3)	25 (20.8)	35 (29.2)	44 (36.7)
<i>Yoga (n=121)</i>	8 (6.6)	22 (18.2)	59 (48.8)	32 (26.5)
<i>Celloids and tissue salts (n=120)</i>	25 (20.8)	42 (35.0)	34 (28.3)	19 (15.8)
<i>Culinary herb prescription (n=121)</i>	15 (12.4)	27 (22.3)	62 (51.2)	17 (14.1)
<i>Topical medicines (e.g. ointments, creams) (n=120)</i>	4 (3.3)	31 (25.8)	68 (56.7)	17 (14.2)

<i>Dried herbs (e.g. infusions) (n=120)</i>	11 (9.2)	52 (43.3)	42 (35.0)	15 (12.5)
<i>Commercial homeopathic remedies (n=118)</i>	36 (30.5)	39 (33.1)	31 (26.3)	12 (10.2)
<i>Specific homeopathic prescribing (n=120)</i>	66 (55.0)	27 (22.5)	18 (15.0)	9 (7.5)
<i>Netipots (n=121)</i>	53 (43.8)	41 (33.9)	19 (15.7)	8 (6.6)
<i>Hydrotherapy (n=120)</i>	54 (45.0)	41 (34.2)	21 (17.5)	4 (3.3)
<i>Ear candling (n=121)</i>	71 (58.7)	39 (32.2)	10 (8.3)	1 (0.8)
<i>Colonics (n=120)</i>	81 (67.5)	26 (21.7)	13 (10.8)	0 (0.0)

Table 5: Perceived need for future access to health infrastructure and services

	No	Unsure	Maybe	Definitely
Profession-specific postgraduate specialisation degrees (n=120)	2 (1.7)	6 (5.0)	14 (11.7)	98 (81.7)
Conventional health providers (n=119)	0 (0.0)	4 (3.4)	19 (16.0)	96 (80.7)
Statutory registration (n=153)	5 (3.3)	11 (7.2)	37 (24.2)	100 (65.4)
Hospitals and other health settings (n=122)	1 (0.8)	7 (5.7)	35 (28.7)	79 (64.8)
Medicare rebates (n=119)	7 (5.9)	6 (5.1)	21 (17.7)	85 (71.4)
Access to restricted herbs (n=122)	1 (0.8)	12 (9.8)	44 (36.1)	65 (53.3)

1. First Do No Harm
2. Doctor as Teacher
3. Apply the Healing Power of Nature
4. Treat the Whole Person
5. Treat the Cause
6. Wellness
7. Health Promotion and Disease Prevention

Figure 1: Naturopathic Principles [World Naturopathic Federation - Roots Report [2]]

