

Integrative Medicine in General Practice in Australia: A Mixed-Methods Study Exploring Education Pathways and Training Needs

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Abstract

Background: Globally, a substantial proportion of general practitioners (GPs) incorporate integrative medicine (IM) into their clinical practice.

Objective: This study aimed to map the IM education and training pathways and needs of a cohort of Australian GPs who are members of the Royal Australian College of General Practitioners' IM Specific Interest Network, which is a group of GPs with interest in IM.

Methods: We conducted a mixed-methods study comprising of an online, cross-sectional survey supplemented with in-depth semi-structured interviews. Data from the survey and interviews were initially analysed separately and then combined.

Results: Eighty-three (83) of 505 eligible GPs/GPs in training (16.4%) participated in the survey, and 15 GPs were interviewed. Results from the two datasets either converged or were complementary. Almost half (47%) of survey respondents had undertaken formal undergraduate or postgraduate IM education, a short course (63%), informal education (71%) or self-education (54%), in at least one of 20 IM modalities listed. Interviewees affirmed there was no single education pathway in IM. Survey respondents who identified as practicing IM were significantly more likely to have IM education, positive attitudes towards IM, particularly natural products, and higher self-rated IM knowledge and competencies. However, knowledge gaps were identified in professional skills domains of population health and context, and organisational and legal dimensions of applied IM practice. Interviewees also highlighted a range of professional and systemic barriers to the practice of IM, education, and training. There was broad support for recognition of IM as a sub-specialty through formalised post-graduate training and accreditation. Most survey respondents (62%) expressed interest in post-fellowship recognition of GPs with advanced skills in IM.

Conclusion: Our findings demonstrate that it is important to define best practice in IM for GPs in Australia and provide a standardised pathway towards recognition of advanced skills in IM.

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Introduction

Integrative medicine (IM) is a “*holistic approach to healthcare that integrates natural products, mind-body practices and/or other complementary healthcare approaches in a coordinated way with conventional healthcare. It emphasizes a holistic, patient-focused approach to healthcare and wellness and treating the whole person, and aims for well-coordinated care between different providers and institutions*”.¹ The demand for integrative medicine (IM) and a desire for diversity in healthcare are recognised drivers of IM adoption and use in Australia,^{2,3} and internationally.⁴

Globally, a proportion of general practitioners (GPs) or primary care/family physicians, incorporate IM into clinical practice, with rates ranging from 85% of GPs in Germany to 16% in Canada and the United Kingdom.⁴ In Australia, at least 30% of GPs have reported practicing IM and prescribe or recommend IM.⁵ In this context, IM refers to “*therapies and medicines that are not conventionally used by medical doctors, but which may complement medical management and, thus, be successfully integrated into medical practice*”.⁶ Examples of IM modalities that might be integrated into clinical practice include natural products (e.g. nutritional or herbal supplements) and mind-body practices (e.g. yoga, meditation, acupuncture). For the purpose of this study, complementary medicine (CM) practitioners refer to health practitioners other than medical doctors who provide IM.

The potential for IM practice to enhance primary care is acknowledged by the Royal Australian College of General Practitioners (RACGP) through inclusion of an IM contextual unit within its lifelong curriculum. Developing skills in IM allows GPs the opportunity to offer a greater range of evidence-based therapeutic options to their patients, individualise approaches to care, assist patients to make informed choices about use of IM modalities, and avoids potentially harmful interactions between integrative and conventional therapies.⁶ Support amongst RACGP fellows and members for incorporating IM into general practice has also been demonstrated through the establishment in 2009 of an IM Specific Interest Network within the RACGP Specific Interests Council.⁷

Refining competencies in the provision of IM within general practice is an advanced skill, however relatively

little is known about how GPs acquire this advanced skill. While some Australian studies have explored GPs' IM attitudes, knowledge, and information sources,^{3,5,8–13} there have been few studies published since 2010. To understand the *current* IM education needs of GPs and GPs in training in Australia, we conducted a mixed-methods study. The aim was to map the IM education and training pathways and needs of a cohort of Australian GPs and GPs in training who are members of the RACGP IM Specific Interest Network, and explore their attitudes, current practice, and perceived standards for the best practice of IM in Australia.

Methods

Study Design

We conducted a mixed-methods study comprising of a cross-sectional survey that was supplemented with semi-structured interviews in 2018–2020. Ethics approval was granted by Western Sydney University Human Research Ethics Committee (H12938) on 3 October 2018.

Survey Sample and Recruitment

A self-selected sample of GPs and GPs in training from across Australia were recruited through the RACGP IM Specific Interest Network. Membership of the network is open to any RACGP Fellow or member who has an interest in IM; members do not have to be currently practicing IM or have completed any IM training. Other (non-GP) doctors, doctors in training or medical students can also join as associate members. For this research, GPs were defined as any medical doctor who was working in primary care, irrespective of whether they were vocationally registered (e.g. being a Fellow of the RACGP). Excluded were medical doctors who had non-primary care specialist training (e.g. physicians and surgeons), those working in secondary and tertiary care settings (e.g. interns and residents), and medical students or doctors in training who were not enrolled in the GP specialist training pathway. Neither financial nor other incentives were offered.

Invitations with an anonymous link to the electronic survey were sent to 1043 members in October 2018, of which 505 (379 GPs and 126 GPs in training) were eligible to participate. Three email reminders were sent to

survey respondents in 2018 (31 October, 28 November, 3 December) and two email reminders in 2019 (10 April and 4 July), respectively.

Survey Procedures, Instrument, and Data Collection

An anonymous 34-question self-administered survey was designed and piloted by the research team, which consisted of Australian GPs, educators, and researchers with expertise in IM and survey methods. Questions were based on previous surveys of Australian GPs on IM training, information sources, knowledge, and attitudes.^{5,8-10} The online survey (Supplementary file 1/S1) was administered through Qualtrics¹⁴ and included the use of multiple-choice questions and open response questions that asked about 1) general demographics; 2) attitudes towards IM and IM practice; 3) IM education and training; and 4) self-perceived IM knowledge, information sources, and education needs. Random ordering of options was used where appropriate, and skip logic questions were used to improve relevance and minimise responder burden.

A description of the study purpose and terminology was provided at the beginning of the survey (S1). The definitions and categories of IM were similar to those used by the National Institute of Health and National Center for Complementary and Integrative Health.¹ Informed consent was implied by participation. Twelve questions on self-rated knowledge and competencies were mapped against three of the five RACGP-defined domains of general practice, which is a framework representing critical areas of knowledge, skills, and attitudes necessary for competent, unsupervised general practice.¹⁵ Domains that were mapped in this study were Applied professional knowledge and skills, Population health and the context of general practice, and Organisational and legal dimensions.

Interview Sample and Recruitment

Purposive sampling was used to recruit GPs for interviews from across Australia who identified as practicing IM for less than 5 years, 5 to 9 years, 10 to 14 years, and longer than 15 years through an advertisement in the RACGP IM Specific Interest Network newsletter (December 2019). To maximise participant variation, snowball sampling techniques were also used to identify GP colleagues of the researchers who were experienced in IM; these GPs were sent a personal invitation via email between November 2019 and January 2020. The invitations provided details of the study, such as the aim and rationale, expected length of the interview, confidentiality and privacy measures, and contact details of the researcher for GPs who wished to participate. Interviewee demographics, such as IM years of practice,

were screened to ensure interviewees met eligibility criteria and recruitment was evenly distributed across the four categories of experience in IM in general practice. Recruitment continued until data saturation,¹⁶ defined as no new themes arising, was evident.

Interview Procedures, Instrument, and Data Collection

Authors CE (GP with dual qualifications in Western and Chinese medicine) and AF (Chinese medicine practitioner) drafted the interview questions that were then circulated to the research team to obtain feedback and gain consensus on final survey questions. The interview guide (Supplementary file 2/S2) was pilot tested by members of the research team and included a series of broad open-ended questions across a related range of topics relevant to mapping Australian GPs' education pathways and needs.

One-on-one semi-structured interviews¹⁶ were conducted by author AF. To increase convenience and participation, interviews were conducted via Zoom (online video platform). The areas covered in the interviews included: basic demographic information, standards for IM best practice, IM skills and competencies, their IM education journey, and views on the future of IM education in Australia. Interviews ranged from 30 to 60 min duration. They were audio-recorded and transcribed verbatim as the aim was to produce transcripts that reflected precisely what was said at the time of the interview without censorship.¹⁷ As a gesture of goodwill, and to partially compensate for lost income from clinical work, interviewees received a gift voucher of AUD \$100 value upon completion of the interview.

Analysis

Data from the survey and interviews were first analysed separately (see below). Subsequently, using the principles of triangulation,¹⁷ the analyses of the two datasets were then merged and interrogated for convergence (agreement), complementary (additional) information, and dissonance (contradictions, discrepancies, or disagreements). As the rationale for conducting the interviews was to supplement the survey results, the qualitative thematic results were mapped against the survey data and subheadings.

Descriptive and inferential quantitative analyses of the survey data were undertaken using SPSS^{®18} and Qualtrics XM software.¹⁴ Questions requiring inferential statistical analysis were determined *a priori*. We hypothesised that respondents who identified as practicing IM would have more positive attitudes towards IM, would have undertaken more IM education and training, and have higher self-rated knowledge in IM. We were also interested in whether there were any differences between survey respondents who obtained their medical degree in Australia compared to overseas graduates, the types of

education in IM they had undertaken, and their self-rated knowledge. To reduce the risk of type 1 errors (as there were over 100 potential inferential tests that could be conducted), the p value for a significant result was set at 0.01 and a staged approach was often applied that began with testing larger combined variables and only testing the subgroups of borderline significant results. The denominator used for the survey response rate was the total number of eligible respondents. For skip questions and inferential statistics, the number of survey respondents who answered the question was used as the denominator.

A thematic analysis¹⁹ of the de-identified transcripts was conducted using Quirkos software.²⁰ Data were independently in duplicate coded by authors AF and SD. The analysis involved moving back and forth between the entire data set and coded extracts. The codes were then arranged according to higher level categories or themes and analysed to identify relationships between themes and subthemes. Common and contrasting themes among interviewees' responses were identified and compared. When relevant, content analysis was conducted to quantify the number of times themes appeared in the text. The final thematic framework reflected themes and subthemes meaningful to the research question and were representative of the interviewees' views that were either strongly held or commonly accepted. The final coding framework and narrative summary were appraised by CE, KT and JHu. Consensus decision making was used to resolve any disagreements. All data were non-identifiable and primarily presented in an aggregated form.

Results

Response Rates

A total of 505 individuals (379 GPs and 126 GPs in training) were sent an invitation by email, of which 77 (20.3%) of the GPs and six (4.8%) of the GPs in training participated in the survey, making the total response rate 16% (n = 83/505) with a 90% confidence level of an 8% margin of error. Excluded from the analysis and response rate calculations were 17 potential respondents who dropped out at the start of the survey, along with one specialist medical doctor and two hospital interns/residents who were not GPs. Seventeen GPs volunteered for the interviews, of which 15 (80.2%) participated. Two GPs did not proceed due to an inability to be able to schedule a mutually convenient time.

Participant Characteristics

The demographic characteristics of the survey respondents and interviewees were similar, and the number of

participants per Australian state or territory reflected the relative population in each state/territory (Table 1). Key differences between the two samples were that none of the interviewees were GPs in training, and all interviewees compared to just over two-thirds of the survey respondents identified as practicing IM. Participants worked or trained in a wide range of clinical settings. One-third of the survey respondents, and just over half the interviewees, stated they worked in a clinic that markets itself as "integrative". No significant differences were found between survey respondents who studied medicine in Australia or overseas and whether they identified as practicing IM compared to those who did not or were unsure ($\chi^2(1, N = 77) = 0.18, p = 0.67$).

Thematic Results and Mixed-Method Synthesis

The final mixed-method synthesis of survey and interview results identified numerous convergent and complementary results, but no dissonant findings, from which the following three themes and their subthemes are presented: 1) IM education pathways – no single pathway, previous IM education, and evidence-based information sources; 2) IM practice and attitudes – an additional skillset, attitudes towards IM, professional and personal use, and discussing IM, 3) education needs – self-rated knowledge and competencies, interest in further training, and continued professional development; and 4) progressing IM education and training in Australia – standards for IM best practice, core IM skills and competencies, delivering education, and calls for a national IM education pathway and accreditation.

Supplementary File 3 (S3) presents the formal thematic analysis from the interviews with supportive indicative quotes. Supplementary File 4 (S4) presents additional quantitative results from the survey.

IM Education Pathways

No single pathway: Participants were asked about the types of education and training in IM they had undertaken. The diversity and breadth of the reported education activities on IM and journeys highlighted that there was no single training pathway (S3. excerpts 2.1a to j). Interviewees explained that since there are no formal, structured IM training pathways for Australian GPs, it was common to discover IM educational opportunities by chance (S3. excerpts 2.2a to e). As such, IM training was self-directed and typically ad-hoc.

Previous education: The most popular IM modalities that survey respondents had undertaken education or training in, including self-education, were nutritional supplements (75%, n = 62/83), meditation (66%, n = 55/83), yoga (60%, n = 50/83), mindfulness-based techniques (54%, n = 45/83), occupational and environment

Table 1 Participant Characteristics.

	Survey Respondents (n = 83)			Interviewees (n = 15)	
	Mean	SD		Mean	SD
Age (years)	50.0 (range 28 to 74)	SD 10.1		49.7 (range 32 to 65)	SD 9.1
Gender	n	%		n	%
Female	57	69		12	80
Male	22	26		3	20
Prefer not to say / no response	4	5			
Country of medical degree			n		%
Australia	51	61		10	67
Other country	31	38		5	33
No response	1	1			
Years in general practice	Mean 18.0 (range 1 to 40)	SD 11.6		Mean 19.5 (range 3 to 35)	SD 11.2
GP qualification	n	%		n	%
GP in training	6	7			
FRACGP or overseas equivalent	60	72		14	93
Other	17	21		1	7
Clinical setting		%	n		%
IM GP clinic	26	31		8	53
Non-IM GP clinic	38	46		7	47
Aboriginal health service	2	2			
IM other type of clinic	2	2			
Non-IM other type of clinic	13	14			
Not in clinical practice	2	5			
Location	n	%		n	%
New South Wales	23	28		7	47
Victoria	23	28		3	20
Queensland	13	16		1	7
Western Australia	11	13		3	20
Northern Territory	2	2		1	7
Tasmania	4	5			
South Australia	3	4			
Australian Capital Territory	1	1			
No response	3	4			
Identifies as practicing IM	n	%		n	%
Yes	59	68		15	100
No	12	14			
Somewhat / unsure	5	6			
No response	6	7			

GP General Practitioner; IM Integrative Medicine; FRACGP Fellowship of the Royal Australian College of General Practice; IM clinic markets itself as “integrative”; Other type of clinic e.g. GP led outpatient hospital clinic, functional medicine clinic, sports medicine clinic, mental health clinic, clinic for homeless people, secondary school clinic; Practicing IM was defined as a holistic approach to healthcare that integrates conventional medical healthcare with natural products, mind-body practices and/or other complementary healthcare approaches.

medicine (51%, n = 42/83), and Western herbal medicines (42%, n = 35/83) (Table 2). Of these, 71% (n = 65/83) reported some type of informal education, short course, or formal education involving natural product use and 69% (n = 57/83) for at least one mind-body practice.

Informal education such as workshops, seminars, webinars (71%, n = 53/83), and short courses (64%, n = 53/83) were the most common formats. Thirty-nine (47%) survey respondents had undertaken formal education, such as an undergraduate or post-graduate

degree, diploma or certificate, or college fellowship offered by training bodies outside of the RACGP. Formal education in the use of nutritional supplements (31%, n = 26/83) and occupational and environment medicine (20%, n = 17/83) were the most common. Whilst the question was not specifically asked, based on free text responses to an “other” option in the multi-choice questions, nine survey respondents referred to the Fellowship of the Australasian College of Nutritional and Environmental Medicine. Notably,

Table 2. Previous IM Education.

	Self Learning	Informal Education	Short Course	Formal Education	Any Education	%
	n	n	n	n	n	%
Natural products						
Nutritional supplements	13	29	25	26	62	75%
Western herbal medicines	11	18	11	9	35	42%
Chinese herbal medicines	1	6	3	2	12	15%
Aromatherapy	8	6	2		11	13%
Mind body practices						
Yoga	20	18	22	6	50	60%
Tai Chi	5	10	9		23	28%
Qigong	5	6	8	2	19	23%
Meditation	23	30	21	5	55	66%
Mindfulness-based techniques	20	21	15	7	45	54%
Relaxation techniques	12	13	11	4	29	35%
Spiritual healing (e.g. faith-based practice, prayer)	8	10	11	2	21	25%
Massage	6	2	12	4	21	25%
Acupuncture	2	3	4	9	17	21%
Reflexology	2	1	3		6	7%
Chiropractic		1	1		2	2%
Osteopathy		1	1		2	2%
Other complementary healthcare approaches						
Occupational & environmental medicine	6	15	16	17	42	51%
Naturopathy	10	8	4	7	19	23%
Ayurveda	11	5	3	2	17	21%
Traditional Chinese medicine	2	6	3	10	10	12%
Total	45	59	53	39	72	87%

N = 83; Informal education: introductory workshop, seminars, webinars; Formal education: undergraduate or postgraduate certificate, diploma or degree, fellowship.

none of the survey respondents had dual qualifications as a medical doctor and chiropractor or osteopath.

Other modalities that were listed in the open-ended survey responses or discussed during the interviews included educational activities and/or qualifications in IM, lifestyle medicine, life coaching, nutritional medicine, anthroposophical medicine, clinical hypnotherapy, prolotherapy, and studying with traditional Aboriginal healers. Several of the interviewees had studied at IM institutions in other countries or been mentored by a senior IM practitioner at various stages of their career (S3. excerpts 2.1a to i).

Identifying as practicing IM was significantly associated with undertaking any type of informal education ($\chi^2(1, n = 77) = 13.58, p < 0.001$), short course ($\chi^2(1, n = 77) = 13.80, p < 0.001$), or formal education ($\chi^2(1, n = 77) = 7.60, p = 0.006$), but not self-education ($\chi^2(1, n = 77) = 1.84, p = 0.18$). Identifying as practicing IM was also significantly associated with undertaking informal education, a short course and/or formal education in any type of natural product use ($\chi^2(1, n = 77) = 14.87, p < 0.001$), a mind-body practice ($\chi^2(1, n = 77) = 7.05, p = 0.008$), nutritional supplements ($\chi^2(1, n = 77) =$

$12.19, p < 0.001$), Western herbal medicine ($\chi^2(1, n = 77) = 11.02, p < 0.001$), acupuncture ($\chi^2(1, n = 77) = 6.16, p = 0.013$), meditation ($\chi^2(1, n = 77) = 7.6, p = 0.010$), or occupational and environmental medicine ($\chi^2(1, n = 77) = 9.08, p = 0.003$), but not any of the other 16 IM modalities listed in Table 2. The only significant differences between survey respondents who had completed their primary medical degree in Australia and those who studied overseas was a borderline increased likelihood of Australian graduates having undertaken any form of education (informal, short course, or formal) in acupuncture ($\chi^2(1, n = 82) = 0 = 5.41, p = 0.02$). This finding was explained by a greater likelihood of Australian graduates having undertaken formal education in acupuncture ($\chi^2(1, n = 82) = 6.16, p = 0.013$), rather than informal education ($\chi^2(1, n = 82) = 3.11, p = 0.078$) or a short course (Fisher's exact test, $n = 82, p = 0.29$).

Evidence-based information sources: Survey respondents were asked about where they obtained evidence-based IM information. Colleagues (55%, $n = 42/76$), searching medical journal databases (54%, $n = 41/76$), professional association websites (49%, $n = 37/76$), and peer-reviewed medical journals (46%, $35/76$) were the

most common information sources. Health organization websites (21%, n = 16/76), mainstream medical media (20%, n = 15/76), and clinical and drug databases (17%, n = 13/76) were the least common (S4. Figure 1). The interviewees also mentioned a wide range of information sources (S3. excerpts 2.1f,g, 4.4c,d), along with the challenges with staying up to date with the exponential growth in IM evidence (S3. excerpts 4.4 b)

IM Practice and Attitudes

An additional skillset: Interviewees consistently described the practice of IM as an advanced, additional skillset (S3. excerpts 1.3e, 1.4a, 4.1a-g). Further, rather than being an alternative model of care “*anyone practicing integrative medicine needs to understand that it’s an extension of mainstream medicine not a replacement*” (S3. excerpt 1.1j).

Attitudes towards IM: Survey respondents were generally favourable towards integrating natural products and mind-body practices with their conventional medical practice (Figure 2). IM was thought to be relatively safe and effective, offering additional, holistic benefits to patients compared to conventional medicine alone (Figure 2). However, views were mixed about whether tighter regulations of natural products were needed before integrating them with conventional medicine, with 43% (n = 33/77) wanting tighter regulations and 27% (n = 21/77) not. Most survey respondents stated they had both the time to recommend natural products (83%, n = 64/77) and preference to prescribe them, rather than referring patients to a pharmacist (75%, n = 58/77) or an accredited CM practitioner (57%, n = 58/77). However, their views were more mixed about mind-body practices, with 65% (n = 50/77) stating they had the time to integrate them into their clinical practice. Only 27% (n = 21/77) preferred to provide

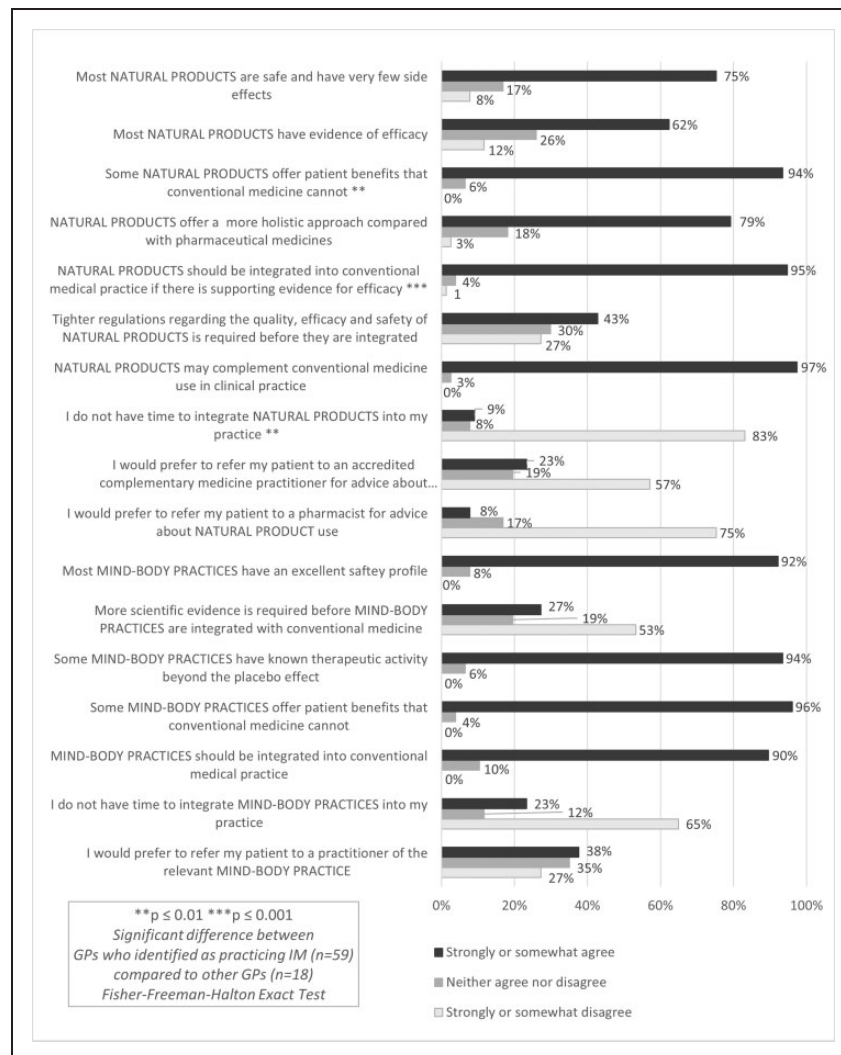


Figure 1. Attitudes Towards Natural Products and Mind-Body Practices (n = 77).

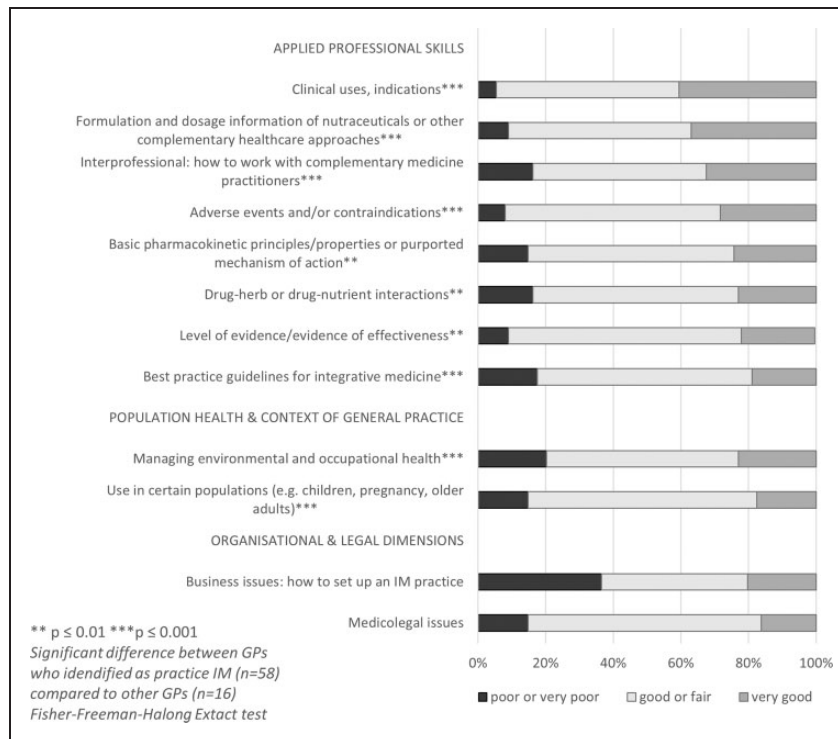


Figure 2. Self-Rated IM Knowledge and Competency.

mind-body practices, while 38% (n = 29/77) preferred to refer patients to a practitioner of the relevant mind-body practice. The only significant differences between respondents who stated they practiced IM compared to those that did not or were unsure were that the IM GPs/GPs in training were more likely to disagree that they did not have enough time to integrate natural products into their clinical practice (Fisher-Freeman-Halton Exact Test $p < 0.001$), agree that natural products should be integrated into conventional medical practice if there was supporting evidence for efficacy (Fisher-Freeman-Halton Exact Test $p = 0.013$), and agree that natural products offer additional benefit to patients outside of conventional medicine (Fisher-Freeman-Halton Exact Test $p = 0.002$) (Figure 1).

Professional and personal IM use: Survey respondents were asked whether they had recommended/referred a patient or personally used various IM modalities during the past 12 months (S4 Table 2, Figure 2). Everyone who responded (n = 75) stated they had recommended natural products to their patients and only one non-IM GP had not personally used any natural products. The most common products were nutritional supplements (64%, n = 47/74), followed by Western herbal medicine (38%, n = 28/74), and Chinese herbal medicine (28%, n = 21/74). Forty-one respondents (55%) had referred a patient or personally consulted a naturopath. Other common modalities were

mindfulness-based techniques (74%, n = 55/74), meditation (72%, n = 53/74), massage (72%, n = 53/74), relaxation techniques (62%, n = 46/74), yoga (62%, n = 46/74), acupuncture (57%, n = 42/74), osteopathy (54%, n = 40/74), chiropractic (43%, n = 32/74), and occupational and environmental medicine (41%, n = 30/74). Respondents who stated they practiced IM were significantly more likely to personally use natural products and recommend them to patients (Fisher-Freeman-Halton exact tests $p \leq 0.001$). They were also more likely to use or recommend Western herbal medicine ($\chi^2(1, N = 75) = 7.77$, $p = 0.006$), Chinese herbal medicine ($\chi^2(1, N = 75) = 7.45$, $p = 0.008$), and acupuncture ($\chi^2(1, N = 75) = 19.23$, $p < 0.001$), but not nutritional supplements ($\chi^2(1, N = 75) = 0.081$, $p = 1.0$).

Discussing IM: Interviewees also emphasised that decisions about IM use should be “as evidence-based as possible, [and] patient-centred” and that a strength of IM is that it supports the patient’s own “decision-making capacity” by providing evidence-based information and the tools to enable informed decisions (S3. excerpt 1.1 g). To this end, survey respondents were asked a series of questions about discussing the potential risks and benefits of IM with patients; the most detailed questions were for natural products.

Survey respondents indicated that ‘most’ or ‘all of the time’ during the past 12 months they responded to patients’ questions about natural product use (83%,

n = 62/75), took a natural product medication history and recorded this in the patient's clinical records (81%, n = 61/75), and discussed any safety issues such as potential drug interactions (73%, n = 55/75) (S4. Table 1). Respondents who identified as practicing IM were significantly more likely to report that they completed these tasks 'most' or 'all of the time' (Fisher-Freeman-Halton exact tests $p < 0.001$). These discussions about natural product use were mostly for nutritional supplements (63%, n = 47/75) rather than Western herbal medicine (37%, n = 28/75) or Chinese herbal medicine (28%, n = 21/75) (S4. Table 2).

Of the remaining 15 IM modalities, the proportion of survey respondents who stated they had discussed potential risks and benefits with patients during the past 12 months ranged from 48% (n = 36/75) for acupuncture to 8% (n = 6/75) for reflexology (S4). Other commonly discussed modalities were yoga (47%, n = 35/75), occupational and environmental medicine (43%, n = 32/75), mindfulness-based techniques (40%, n = 30/75), and meditation (40%, n = 30/75). The only other significant differences between respondents who identified as practicing IM compared to those who did not or were unsure, was an increased likelihood of respondents who identified as practicing IM reporting that they had discussed occupational and environment medicine ($\chi^2(1, N = 75) = 6.86, p = 0.008$).

Educational Needs

Self-rated knowledge and competencies: Survey respondents were asked to self-rate their knowledge in various aspects of IM in clinical practice (Figure 2). Across the domains of general practice,¹⁵ most respondents self-rated their knowledge and competency as good or fair. Most respondents were confident with their knowledge about clinical uses, indications, formulation/dosages, adverse events of complementary healthcare approaches, and their interprofessional skills when working with CM practitioners. They were least confident about the business aspects of IM practice. Survey respondents who stated they practiced IM were significantly more likely to rate themselves having 'very good' or 'good/fair' knowledge in all aspects of Applied professional knowledge and skills, and Population health and the context of general practice (Fisher-Freeman-Halton Exact tests $p = 0.002$ to $p < 0.001$), but not the Organisational and legal dimensions (Fisher-Freeman-Halton Exact tests $p = 0.07$ and $p = 0.02$). They were the only respondents to rate their knowledge and competency as very good. There were no significant differences in self-ratings between survey respondents who undertook their primary medical studies in Australia compared to those who studied overseas.

Additionally, interviewees described the difficulty they experienced in applying the theory they had learnt

at conferences or from courses into their everyday clinical practice (S3. excerpt 3.1a, b). This included the challenges with reconciling "different paradigms, different understanding, different philosophy, different interpretation" with conventional medicine (S3. excerpt 3.1n), and the need for specific training in the use and interpretation of "non-standard pathology tests" that they or other practitioners might order (S3. excerpt 3.1d). Interviewees also affirmed that it would be valuable to receive more non-clinical education about the business aspects of running a practice in IM (S3. excerpt 4.2i) and the medicolegal aspects of practicing IM and obtaining informed patient consent.

Interest in further training: Thirty (36%) of the 83 survey respondents stated they were interested in further training in at least one of the 20 IM modalities listed in Table 3. The greatest interest was for mind-body movement practices (20%, n = 17/83), natural products (19%, n = 16/83), occupational and environmental medicine (14%, n = 12/83), and acupuncture (13%, n = 11/83) (Table 3). Most of this interest was for additional training in a category that GPs/GPs in training had already undertaken some type of education (29%, n = 24/83). Only 7% (n = 6/83) stated they were interested in further IM training in a new IM modality.

Continuing professional development: The above survey question specifically asked about 'training' rather than continuing professional development (CPD), of which 64% (n = 53/83) of the survey respondents had already completed a short course and 47% (n = 39/83) had undertaken formal education in at least one of the 20 IM modalities (Table 2). This included all the interviewees, who then went on to emphasise the importance of maintaining IM knowledge and skills through CPD. This included being a member of an IM professional body, attending conferences and seminars, regular reading, and even joining a study group or support group (S3. excerpts 4.4a to g).

Progressing IM Education and Training

A key focus of the interviews was to explore GPs' thoughts on progressing IM education and training in Australia. This included in-depth discussions about standards for best practice, required skills and competencies, and barriers and enablers of IM education.

Standards for IM best practice: Interviewees affirmed that IM best practice starts with a sound foundation in conventional medicine, and as such, should be the same as any other form of medicine (S3. excerpt 1.1a). They emphasised that a GP who practices IM should "be a good doctor first and foremost in conventional medicine, and then you need to add on extra skills to that" (S3. excerpt 1.1i).

Table 3. Interest in Further IM Training.

	Additional Interest		New Interest		Any Interest	
Yoga, Tai Chi, and/or Qigong	8	10%	9	11%	17	20%
Natural products	11	13%	5	6%	16	19%
Occupational & environmental medicine	5	6%	7	8%	12	14%
Acupuncture			11	13%	11	13%
Mindfulness, meditation, and/or relaxation	6	7%	2	2%	8	10%
Naturopathy			6	7%	6	7%
Spiritual healing	3	4%	3	4%	6	7%
Massage, chiropractic, and/or osteopathy ^a			4	5%	4	5%
Traditional Chinese medicine			3	4%	3	4%
Aromatherapy			2	2%	2	2%
Ayurveda			2	2%	2	2%
Reflexology			2	2%	2	2%
Total (n = 83)	24	29%	6	7%	30	36%

^a1 respondent was interesting in all three, the other 3 were only interested in massage. Additional interest: respondents had already undertaken informal education, a short course and/or formal education. New interest: respondents had not undertaken any informal education, a short course and/or formal education.

Interviewees emphasised that IM education and training should be “*evidence based and from a well-reputed institution that’s been a regulated and recognised body in the field of complementary medicine or one of the modalities*” (S3. excerpt 1.1d). This could help address ongoing uncertainties about IM standards (S3. excerpts 1.1 b,c), as currently there was no “*clearly understood standard for integrative medicine*” (S3. excerpt 1.1 b).

Despite these uncertainties, interviewees suggested components for best practice. Having received education or training from a recognised institute was thought to be important (S3. excerpt 1.1d). Practicing evidence-based medicine (S3. excerpt 1.1e) and ensuring patient safety (S3. excerpt 1.1f) were priorities, as was a patient-centred approach that enables informed decision making (S3. excerpt 1.1 g). Indeed, discussing “*the pros and cons of the treatment and how it relates to their condition*” (S3. excerpt 1.1e) so that patients “*can give clear, informed consent*” (S3. excerpt 1.1f) was considered integral to IM best practice.

Core IM skills and competencies: Leading on from this, interviewees were asked to nominate core IM subjects. “*Nutrition*” (S3. excerpts 4.2a, 4.2 h) and in-depth knowledge “*about vitamins and minerals and supplements, and where they’re helpful and when they can be harmful*” (S3. excerpt 4.2 b) were often discussed, as was preventive medicine (S3. excerpt 4.2d), lifestyle medicine (S3. excerpt 4.1c), environmental medicine (S3. excerpt 4.2c, g), epigenetics (S3. excerpt 4.2e), the microbiome (S3. excerpt 4.2f, g), and mind-body medicine (S3. excerpt 4.2 g). Interviewees also recognised there would be additional subjects according to the GP’s interests (S3. excerpt 4.2j).

As well as being informed about “*modern day integrative medical models or paradigms*”, one interviewee stated

that IM education should ensure GPs had general knowledge across the scope of all IM modalities and “*cultural understandings of health and illness around the world*” (S3. excerpt 4.2o).

“*Unpacking*” (S3. excerpt 4.21) all this additional IM knowledge and applying it in clinical practice was considered equally as important (S3. excerpt 4.2k). Having the skills to “*sit with the patient in terms of journeying through different points that’s safe and not overwhelming for all parties*” was described as “*the art of delivering integrative medicine*” (S3. excerpt 4.21).

Considering all this, interviewees suggested that a “*panel of credible experts in the field*” would need to lead the development of a core curriculum for IM education (S3. excerpt 4.4f).

Delivering education: Interviewees thought postgraduate education should be tailored and flexible. A combination of in-person and online learning was recommended (S3. excerpt 4.5f). Many valued interactive formats, with one interviewee commenting that “*two hours face to face is probably equivalent to about six hours on a webinar*” (S3. excerpt 4.5a) and they also provide important networking opportunities (S3. excerpt 4.5a, b). Online/virtual platforms were also seen as useful, “*particularly for convenience, because face-to-face can be hard to get to*” (S3. excerpt 4.5c), especially “*if you’re on one side of the country having to travel to the other side, [as IM] training is not always offered locally*” (S3. excerpt 4.5k). Learning “*at your own pace*” (S3. excerpt 4.5d) was important, as GPs have concurrent clinical and personal commitments (S3. excerpt 4.5 e).

Peer group learning, mentors, and exposure to IM in clinical practice early on in their careers (e.g. working in IM clinics) were frequently highlighted (S3. excerpts 4.3 g, 4.3e, 4.4a, 4.4 g, 4.5 g, 4.5j).

Several interviewees emphasised that IM education should “*start in the medical schools*” (S3. excerpt 4.6f), including opportunities for clinical placements (S3. excerpt 4.6e). It was proposed that undergraduate exposure might also help destigmatise IM. One interviewee commented that prior to undertaking additional IM education “*I was very sceptical ... [and questioned its] credibility ... [because] I hadn’t learnt specifically about that in medical school or in my postgraduate training*” (S3. excerpt 3.1 s).

Calls for a national IM education pathway and accreditation: The findings from the interviews provided additional insights into the challenges and barriers of pursuing further education and training in IM. One of the main issues expressed was the absence of a single, “*standardised pathway*” (S3. excerpt 4.6a) and no regulating body for medical doctors who specialised in IM (S3. excerpt 4.6d).

Interviewees spoke of the need for a “*formalised, diploma-based training or fellowship-based training as a postgraduate*” (S3. excerpt 3.1o). One interviewee commented that postgraduate medical training with the Fellowship of the Australasian College of Environmental or Nutritional Medicine (ACNEM)²¹ “*seems to be the closest area to a formalised academic training in integrative medicine that we have in Australia*” (S3. excerpt 3.1o). Another interviewee was studying for the Fellowship of the Australian Medical Acupuncture College (AMAC).²² Various other professional associations and educational bodies were also mentioned; however, the key issue was the absence of “*one unified training*” program for IM (S3. excerpt 3.1r).

Therefore, “*deciding what training to do can sometimes be a challenge because there’s not necessarily a recognised speciality and clear pathway to become an integrated practitioner. So that is a challenge as well that can put people off training - not knowing what to train in and how much training you need to do before you can call yourself an integrative practitioner*” (S3. excerpt 3. 3.1 h).

Interviewees also frequently described IM as being a marginalised medical practice and spoke about the stigma, backlash, and negative remarks they faced from peers and the broader medical community in choosing this career pathway (S3. excerpt 3.1e). The pressure and fear of practicing outside of nationally endorsed clinical guidelines and the consequences that may follow, such as having to justify their use of IM in clinical practice to the medical board and possible lawsuits, were other barriers to studying and practicing IM (S3. excerpts 3.1f,g). In this context, formalising training in IM was also important for advocacy as there was a need to strengthen the IM “*voice within the medical profession and also improve the reputation*” of IM (S3. excerpt 3.1i).

Interviewees thought that IM is a standalone subspecialty and noted that their IM knowledge and skills enabled them to work with patients, many of whom had complex health problems and had already consulted other medical specialists (S3. excerpts 4.1a to g). They called for “*a recognised fellowship pathway*” and for IM to be “*a recognised speciality*” with its own “*governing body*” (S3. excerpt 4.5 h). This could include endorsing qualifications obtained through other well-established educational organisations so “*that your skills and competencies are recognised*” (S3. excerpt 4.5 h). To this end, 47% (n = 39/83) of the survey respondents had already undertaken some type of formal undergraduate or postgraduate education and training in IM (Table 2) and 36% (n = 30/83) stated they would be ‘extremely likely’ and 27% (n = 22/83) ‘somewhat likely’ to pursue post-Fellowship advanced skills recognition in IM with the RACGP.

This lack of recognition was thought to be a deterrent to pursuing additional postgraduate study in IM. Nearly all interviewees stated that financial cost was a barrier to IM education (S3. excerpt 3.1j). Coupled with time pressures, mainly due to work and family commitments (S3. excerpt 3.1k, l), and for some, having to travel to obtain their IM education (S3. excerpt 4.5k), the interviewees commented that they had “*put in a lot of effort*” [and] “*time studying*” IM, yet “*there’s a lack of recognition for it as a speciality*” (S3. excerpt 3.1i) and this was viewed as an important barrier to other medical doctors who might be interested in post-graduate training in IM.

Discussion

This mixed-methods study is the first to map the IM education and training of a cohort of Australian GPs and GPs in training. The findings expand upon and update the pre-existing literature on GPs’ attitudes, information sources, and provision of IM services in Australia.^{3,5,8–13} The importance of establishing national IM education and accreditation pathways that promote safe, evidence-based use of IM was identified. This included support for post-fellowship specialty recognition by the RACGP of GPs who have attained advanced skills in IM.

The study confirmed the importance of having standardised pathways for IM education and accreditation of Australian GPs. To date, GPs seeking to gain additional skills in IM have pursued diverse educational streams, most likely of varying standards. They reported undertaking a substantial amount of self-education, informal education, and short courses across the range of IM modalities that are commonly used by people living in Australia.² However, less than half had undertaken any formal IM education, such as an undergraduate or postgraduate certificate, degree or fellowship. This may, in

part, be reflected by the limited IM training opportunities in Australia. Establishing standards for accreditation and training are important and have been cited in multiple studies as key elements of integrating evidence-based IM into primary healthcare.²³ Strong leadership and advocacy is, therefore, required to establish standardised pathways for medical doctors seeking to build their IM skills and gain national accreditation in Australia.

Consistent with this, there was considerable interest among GPs to pursue post-fellowship recognition of their advanced skills in IM. Such acknowledgement of advanced skills would help set a benchmark for evidence-based clinical standards, training, and best practice of IM for GPs in Australia. It would also provide this cohort with the scaffolding that is lacking in the existing, fragmented training pathways. A post-fellowship recognition framework is distinct from an education offering, such as a short course or postgraduate qualification. It can provide a more flexible approach for recognition of attainment of advanced skills that are not generally expected to be obtained at the level of a newly-fellowed GP. Post-fellowship recognition considers the acquisition of knowledge and skills to meet prescribed competency outcomes, plus mastery through clinical experience. The IM Contextual Unit within the RACGP Curriculum⁶ offers potential guidance, as does the extensive work that has been undertaken internationally to establish core competencies for IM physicians,^{24,25} including GPs.^{26–28}

Considerable support was expressed for advancing the recognition of IM as a sub-specialty within conventional healthcare. This was especially important in the context of interviewees' descriptions of the impact of negative attitudes towards IM doctors, the sense of marginalisation, and fear of being seen to practice outside of nationally endorsed clinical guidelines. However, it is unclear whether the interviewees were referring to non-regulatory recognition of IM as a speciality (e.g. fellowship of a professional organisation or college or post-fellowship specialisation), or to recognition of IM as a medical specialty by the Medical Board of Australia²⁹ with associated protection of title. For example, in contrast to Australia, IM is considered a specialty in the United States (US). Physicians can sit the written exam and apply for certification by the American Board of Integrative Medicine within the American Board of Physician Specialties after meeting certain requirements, including completing a Fellowship of Integrative Medicine or graduating from an accredited IM college or university.³⁰ Whether there is broader support and interest within the Australian medical profession for formal accredited IM training programs and recognition of IM as a specialist field is yet to be formally explored.

Our findings suggest that some GPs with an interest in IM are unaware of existing resources that help to define IM best practice, such as the IM Contextual Unit in the RACGP Curriculum⁶ and the Australasian Integrative Medicine Association (AIMA) Best Practice for Integrative Medicine in Australian Medical Practice.³¹ Whilst the interviewees were not asked about concurrent memberships with other professional organisations, such as AIMA, it is clear from their responses that further work is required to ensure that all GPs who identify as practicing IM are aware of existing Australian standards and are familiar with well-established standards in countries, such as the US. Notwithstanding, whilst the interviewees described a lack of clarity around best practice in IM, in keeping with an earlier study of Australian GPs who identified as practicing IM,¹³ they articulated that the practice begins with the fundamentals of good medical practice overall. Defining best practice standards for IM in Australian general practice that uphold standards in clinical practice, such as adequate history taking and relevant examination, good record keeping, appropriate investigations and informed consent should also be part of the development of a post-fellowship recognition framework by the RACGP.

We found generally favourable attitudes towards integration of IM into clinical practice in primary care, particularly from those GPs who identified as practicing IM. Similar positive attitudes of GPs have been reported in other Australian^{5,9,12,13} and international studies,^{32–35} and that attitudes towards IM were more positive if the GP identified as practicing IM.⁵ However, not all attitudes were favourable. For example, there was a preference not to refer to pharmacists and/or accredited CM practitioners, particularly for natural products, and mixed views about the need for tighter regulation regarding the quality, efficacy, and safety of natural products. In another qualitative study of GPs who practice IM in Australia, there were similar concerns around lack of evidence or safety to support the use of some IM, and of varying levels of education and training standards among CM practitioners.¹³ The current findings might also reflect 1) greater confidence with prescribing natural products, as more GPs had undertaken some additional natural products education compared to mind-body interventions; 2) safety concerns with natural products, such as more clinical contraindications, risks of interactions with pharmaceuticals, or greater reassurance about quality control if the GP recommends a specific brand that they trust; or 3) pragmatic constraints, such as the time and infrastructure required to provide a mind-body service compared to prescribing a natural product. Irrespective of the reasons, the reluctance to refer patients to CM practitioners contrasts with other Australian and international studies reporting that

both patients and primary care practitioners see the value of a team-based model of IM, often with the GP or primary care provider as the clinical leader, coordinator, and referrer to CM practitioners.^{32,36–44} Whilst the findings may reflect nuances in how the questions were asked, given that a team-based model of IM is also a patient-centred approach, future education offerings in IM should focus on developing interprofessional competencies amongst GPs and GPs in training.

General practitioners who identified as practicing IM were also more likely to report taking a comprehensive approach towards history taking that included taking a complete medication history, including natural products, and recording this in the clinical records and responding to questions about IM use and safety. This is consistent with previous findings that Australian GPs who identified as practicing IM were more likely to communicate with patients about natural products.⁵ However, regardless of the respondents' current practice of IM, the self-rated competencies around the process of IM practice, such as the business of setting up of an IM practice and applying theory into practice, were relative knowledge gaps that identified by both survey and interview participants. Training in IM for GPs must ensure it incorporates these elements to facilitate the translation of knowledge into practice and service delivery. As the interviewees identified, this can also be enhanced by mentorship, clinical placements and peer support. Opportunities to evaluate the impact of such training on day-to-day practice and patient experiences, including patient reported outcomes, should also be considered.

The findings from this study support wider calls to incorporate more IM education into the medical curricula of Australian universities.^{11,45,46} Assessment of the effectiveness of IM education programs for medical students and clinicians suggests positive changes (albeit largely subjectively reported) in attitudes, knowledge acquisition and skills, and patient safety and management.⁴⁷ Medical students, including those in Australia, are generally supportive of learning about evidence-based IM approaches, and recognize the importance of discussing IM use with patients.^{45,48} Global data show increasing trends of medical education accreditation bodies promoting implementation of evidence-based IM content in medical curricula with broad familiarization for medical students.^{45–49} Although exposure to some IM learning is taking place in the Australian context,⁴⁶ compared to other international counterparts, it may be far less substantial in overall hours dedicated to IM content.¹¹

Strengths

A critical strength of this study was the use of a mixed-methods approach. By utilising both quantitative and qualitative research and data, we obtained rigour

through reliability and versatility as well as breadth and depth of understanding and corroboration, while offsetting the weaknesses inherent to using each approach alone. In addition, our coding granularity combined with relevant judgment and experience of the researchers enabled us to reach thematic saturation, which in turn, enhanced the overall quality, validity, and generalizability of the findings.

Limitations

Despite the response rate being reasonable for medical doctors,⁵⁰ it was low nonetheless and will likely bias the survey results, and must be interpreted within this context. The GPs and GPs in training were a self-selected sample who have an interest in IM. The findings are unlikely to be generalizable to Australian GPs in general or other medical specialists. Other limitations include recall bias about education pathways, particularly for less formal education. Confirmation bias was another possibility, as GPs/GPs in training who identified as practicing IM would be expected to have higher self-ratings of their IM knowledge and competency, and as such, this may not reflect their true capacity.

Conclusion

Our findings demonstrate that there is a need to define best practice in IM for GPs in Australia and provide a standardised pathway towards recognition of advanced skills in IM. While this cohort of GPs/GPs in training with an interest in IM generally rated their competencies highly on applied professional skills, gaps remain in domains such as population health and context, and organisational and legal dimensions should be addressed.

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Declaration of Conflicting Interests





The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: CE declares that she is the Jacka Foundation Senior Research Fellow, practicing GP and acupuncturist, Chair of the RACGP IM Specific Interest Network (voluntary role), Program Lead of an academic integrative healthcare centre (no financial interest), past GP Advisory Board member for Blackmores Research Institute, has received industry funding from nutraceutical and acupuncture device companies to conduct clinical trials, and has received honoraria and had travel

expenses covered for presenting at TCIM events. JHar is Senior Lecturer in Complementary Medicine (CM) at The University of Sydney where she engages in the development, delivery, and evaluation of CM curricula and conducts CM research. JHar has received travel and research funding from key stakeholders in CM. JHar and JHu are former board members of AIMA. JHu is an academic GP with a clinical interest in IM and has received honoraria and had travel expenses for presenting at TCIM events. GD is a practicing GP in an integrative medical practice and was a past GP Advisory Board member for Blackmores Research Institute. SM is an academic GP and holds positions at Southern Cross University and Western Sydney University. He is a board member of the Australasian College of Nutritional and Environmental Medicine, which provides education training to medical doctors and allied health professionals. He has received consultancy and research funding from the complementary medicines industry and undertakes clinical, laboratory and epidemiological research on the pharmacology of natural products and complementary medicines. GS is a practicing GP and Senior Medical Education Advisor for the RACGP and was paid to coordinate development of the 2016 IM Contextual Unit within the RACGP Curriculum. VK and MP declare no conflicts of interest. As a medical research institute, NICM Health Research Institute receives research grants and donations from foundations, universities, government agencies, and industry. Sponsors and donors provide untied and tied funding for work to advance the vision and mission of the Institute. The project that is the subject of this article was not undertaken as part of a contractual relationship with any donor or sponsor.

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Supplemental Material

Supplemental material for this article is available online.

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