



## Educating for collaboration: The outcomes of an interprofessional education workshop for complementary and alternative maternity care providers



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### ABSTRACT

**Objectives:** Despite high community use of complementary and alternative medicine (CAM) poor collaboration between conventional and CAM practitioners have been identified in many health sectors including maternity care. This is in part associated with a deficit in the formal training of CAM practitioners which overlooks collaborative practice skills and guidelines. This study evaluates the outcomes of an interprofessional education workshop which endeavours to improve the collaborative practice of CAM practitioners providing care to pregnant women.

**Methods:** A pre-workshop and post-workshop questionnaire which evaluated the participants' perception of self-proficiency and their interprofessional practice behaviours when providing maternity care. Descriptive and inferential statistical analysis of the data was undertaken.

**Results:** CAM practitioners ( $n = 30$ ) providing care to pregnant women participated in the project. Prior to taking part in the workshop a low level of confidence in pregnancy-specific physiology and psychology knowledge more broadly but also poor confidence in engaging with conventional maternity care providers and understanding conventional models of maternity care was identified amongst participants. Participants who felt more positive about their knowledge of pregnancy and birth physiology were more likely to enquire about women's conventional care and discuss safety issues with women in their care. Following workshop involvement the participant's awareness of the models of maternity care available to Australian women improved alongside participants' knowledge of the scope and role of obstetricians and midwives. There was a reduced need by participants to have their role acknowledged by conventional care providers as important to enable effective collaboration after workshop completion.

**Conclusions:** Interprofessional education is argued to be a valuable tool to promote interprofessional collaboration and communication. It may be employed as a useful tool to encourage stronger links and improved integration between CAM and conventional health professionals.

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### What is already known about this topic?

- Poor interprofessional links between complementary and alternative medicine (CAM) and conventional care practitioners providing care to the same individual creates potentially unsafe care provision.
- Barriers to interprofessional communication and collaboration between CAM and conventional care practitioners include varying levels of CAM qualification and training, and interprofessional differences in language and jargon.

- Interprofessional education (IPE) is a model which is argued to be useful in overcoming such barriers and promote collaboration between professional groups.

### What this paper adds?

- Increasing CAM practitioners knowledge about conventional care practice may increase their confidence in discussing safety issues with individuals in their care.
- CAM practitioners engaging in IPE programs may be more able to effectively collaborate with conventional care providers.
- IPE workshops may overcome deficits in CAM practitioner training regarding collaborative practice.

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## 1. Introduction

Complementary and alternative medicine (CAM) – defined as healthcare not traditionally included in conventional medical care or medical education [1] – is a broad and diverse field of products, treatments and therapies [2]. In Australia, CAM now accounts for up to half the healthcare sector, by both practitioner visits and out-of-pocket expense [3], and in large tracts of Australia CAM practitioners may account for up to half of all practitioners delivering primary care services [4]. However, despite high community use and the increasingly significant role CAM practitioners appear to play in the Australian healthcare setting, the inter-professional dynamics between CAM and conventional providers has largely been unexplored [5,6].

### 1.1. The safety and risk of poor interprofessional dynamics

Being defined by exclusion rather than inclusion, CAM practice primarily operates outside of state authorised biomedical services and, with rare exceptions, is usually offered on a fee-for-service basis by non-medical practitioners with varying levels of qualification and certification [7]. This ‘outsider’ status for CAM practitioners has been argued to create an unsafe environment where individuals seeking care from CAM and conventional care providers are at risk of either overlaps or gaps in care provision [5]. A review of other dynamic areas of healthcare has found that providing patient care through a cohesive team of health professionals is linked with better outcomes for patient safety [8]. It has also been argued that addressing interprofessional collaboration for improved patient care requires that programs move beyond specific clinical scenarios and deal with broader issues within the health system [9].

### 1.2. Barriers to interprofessional collaboration between CAM and conventional practitioners

A range of barriers are suggested to commonly prevent effective interprofessional communication [10] and a number of these are directly relevant to the interface between CAM and conventional medicine. These include hierarchy [11], historical interprofessional rivalries [12,13], differences in language and jargon [14], variance in levels of qualifications and status [15], and intraprofessional differences in practice standards and requirements [16]. Whilst some of these barriers are immutable (i.e. historical rivalry between CAM and conventional medicine), issues such as varying levels of qualification and training, and differences in language and jargon may be transformed through effective professional development and education [5]. Likewise, the absence of historical rivalry between CAM and some professions such as nursing [17] and midwifery [18] indicates that programs which overcome differences in language and training should be effective in promoting improved collaboration between CAM practitioners and professionals from these other health disciplines. As some of the greatest risk of CAM occurs from CAM practitioners failing to refer, or being unable to identify when to refer, to other practitioners [19], breaking down barriers to interprofessional collaboration between CAM and conventional practitioners may also have a positive effect on patient safety amongst women who use CAM in maternity care.

### 1.3. Interprofessional collaboration in maternity care

Within the context of maternity care, the interface between CAM and conventional care provider has received increasing

interest from researchers and commentators [5,6,18,20–23]. This interest has identified a high use of CAM by pregnant women [6,24] with recent research reporting a substantial number of Australian women consulting with a CAM practitioner during pregnancy [22]. In contrast, other research has also reported that midwives recommend and prescribe CAM to women in their care [20] in part due to a perceived affiliation with the philosophies and principles underpinning CAM practice [18]. However, there is only emerging work which has explored the ‘grassroots’ communication and collaboration between CAM practitioners and maternity care providers [23]. This preliminary research has examined the interprofessional communication patterns between CAM practitioners and midwives from the perspective of practicing midwives and reports low rates of formal communication. However, the midwives reported being more likely to initiate formal communication themselves rather than receiving formal communication from a CAM practitioner.

### 1.4. Interprofessional education to improve collaboration and communication

The reasons for this low rate of initiating formal communication by CAM practitioners may be linked to the ‘outside’ status of CAM practice, which is in part developed through the content of education courses for CAM which emphasise the separation of CAM from the centralised biomedical health services [11]. This may then be reinforced by the realities of CAM practice which continue to operate outside of state authorised health care provision [25]. Some commentators have even suggested that CAM practices can become shaped by their marginal status, assuming oppositional postures irrelevant to their core doctrines, which then contribute to further the marginal nature of CAM professions [26]. It has been argued that a useful tool to overcome such barriers and promote more effective collaboration is through interprofessional education (IPE) [5,27]. IPE is an approach to education through which members of different professions “learn with, from and about one another to improve collaboration and quality of health care” [28]. The aim of IPE is to develop the professional attributes considered necessary for safe, collaborative practice [29]. In particular, providing IPE through continuing professional education (CPE) workshops has been found to address and improve the delivery of interprofessional care [29].

This paper reports the outcomes associated of the first known exploratory investigation of an interprofessional education program which was delivered by a midwife to CAM practitioners with the primary purpose of promoting more effective interprofessional competence, communication and collaboration.

## 2. Methods

This study was developed to assess the participant outcomes of an existing inter-professional education workshop for CAM practitioners who provide care to pregnant women. Workshop attendees ( $n=30$ ) were invited to participate in the study immediately prior to commencement of the first workshop session. It was made clear to all attendees that participation was non-compulsory, participant information sheets were provided and informed consent forms were completed prior to participation. Coded and de-identified questionnaires were provided to participants to complete prior to workshop commencement (pre-workshop questionnaire) and immediately following participation in the workshop (post-workshop questionnaire). Ethics approval for the project was obtained from the University of Queensland (#AS080709).

### 2.1. The workshop

The intervention was an 8 h IPE workshop designed for CAM practitioners who provide care to pregnant women. The workshop was developed and delivered by Embrace Holistic Services and covered pregnancy and birth physiology, pregnancy psychology, common complaints of pregnancy, complications of pregnancy and birth, conventional management of complaints and complications of pregnancy and birth, models of maternity care in Australia, and interprofessional communication.

### 2.2. Demographics

The participants were asked about their age, gender, clinical experience, background in formal training in maternity care, therapies used in clinical practice, and number of currently active patients seeking support for pregnancy and conception-related health concerns. This was included in the pre-workshop questionnaire only.

### 2.3. Perceptions of self-proficiency and conventional maternity care

Participants were asked to respond to identify their perceptions of their own clinical proficiency in relation to maternity care through a 5 point likert scale. Areas such as perceived knowledge of pregnancy physiology and psychology, models of care, and scope of practice for conventional maternity care providers were evaluated. The participants' confidence in providing support and advice to women receiving conventional care, and in communicating and collaborating with conventional care providers were also examined. This was included in both the pre-workshop and post-workshop questionnaires.

### 2.4. Practice behaviours

The participants were asked to report their practice behaviours over the previous 3 months in relation to pregnant women in their care. These include: asking questions about their expectations, birth plans, and conventional management of health complaints; opened discussions or provided advice about conventional management of health complaints, safety issues of conventional treatments, psychological issues related to pregnancy and birth; discussed, recommended or collaborated with other conventional maternity carers. This was included in the pre-workshop questionnaire.

### 2.5. Statistical analysis

Descriptive statistics were employed including frequencies, percentages and means, with associated standard deviations. Pearson chi-square tests were used to test for association between categorical variables. A  $p$ -value of  $<0.05$  was adopted to determine the level of statistical significance. Analyses were conducted using the statistical software STATA 11.1.

## 3. Results

### 3.1. Demographics

All CAM practitioners who attended the workshops chose to participate ( $n = 30$ ) in the study (see [Table 1](#)), and completed pre-workshop and post-workshop questionnaires. The majority were less than 44 years old and had been in clinical practise as a CAM practitioner for up to 14 years, with a significant number ( $n = 14$ , 46%) having less than 4 years experience. Very few participants had previously undertaken formal maternity-related training ( $n = 6$ ,

**Table 1**  
Demographics of participants ( $n = 30$ ).

Demographic		<i>n</i>	%
Age	<34 years	11	37
	35–44 years	12	40
	>45 years	7	23
Gender	Female	30	100
	Male	0	0
Previous formal maternity-related training	No	24	80
	Yes	6	20
Experience as a CAM practitioner	<4 years	14	46
	5–14 years	12	40
	<15 years	4	13
Therapies used in practice	Naturopathy	16	53
	Herbal medicine	12	40
	Nutrition	12	40
	Massage	10	33
	Reflexology	6	20
	Acupuncture	5	17
	Aromatherapy	4	13
	Yoga	2	7
	Homeopathy	1	3
	Chiropractic	1	3
	Mean	SD	
Number of currently active maternity-related patients	Pregnant	3	4.69
	Attempting to conceive	4	5.28
	Recently given birth	3	2.86

20%), and all were female. The most common therapies used in clinical practice were naturopathy ( $n = 16$ , 53%), herbal medicine ( $n = 12$ , 40%), nutrition ( $n = 12$ , 40%), and massage ( $n = 10$ , 33%). On average, the number of pregnant women seen by participants in clinic was similar to the number of women attempting to conceive, whilst women in the postnatal period were less common in the participants' current client base.

### 3.2. Perceptions of self-proficiency and conventional maternity care

As shown in [Table 2](#), prior to undertaking the workshop, the participants felt least confident in their knowledge of the models of care available to women birthing in Australia, the role and scope of conventional maternity care providers (midwives and obstetricians), and their ability to communicate and collaborate with these conventional carers. In contrast, they tended to hold positive perceptions about their knowledge of pregnancy and birth physiology, and also held the view that conventional maternity health professionals acknowledge the importance of the CAM practitioners' role before collaboration could occur. Upon completion of the workshop, the most substantial change in perceptions was in the participants' awareness of the models of care available to women birthing in Australia in which their responses moved on average 1.4 categories closer to "strongly agree" compared with their pre-workshop responses ( $SD = 1.18$ ). Likewise, their perceived understanding of the scope and role of obstetricians (mean = 1.28,  $SD = 1.13$ ) and midwives (mean = 1.39,  $SD = 0.91$ ) also increased by a similar degree. Increases were seen in the participants' confidence in being able to answer questions about complications, discomforts and disorders of pregnancy (mean = 1.07,  $SD = 0.94$ ), as well as being able to support women being treated conventionally for these pregnancy-related complications, discomforts and disorders (mean = 1.07,  $SD = 0.96$ ). The only perception which was identified as diminishing over the course of the workshop was the view that midwives and obstetricians needed to acknowledge the importance of the CAM practitioners' modality before the practitioner felt able to

**Table 2**  
Participant's perceptions of self-proficiency regarding engagement with conventional maternity care ( $n = 30$ ).

Perception	Survey <sup>a</sup>	Strongly disagree $n$ (%)	Disagree $n$ (%)	Neutral $n$ (%)	Agree $n$ (%)	Strongly agree $n$ (%)	Difference <sup>b</sup> mean (SD)
I know enough about pregnancy and birth <u>physiology</u> to be proficient in my role as a health practitioner	Pre	0 (0.0)	8 (26.7)	5 (16.7)	16 (53.3)	1 (3.3)	0.76 (0.91)
	Post	0 (0.0)	0 (0.0)	4 (13.8)	18 (62.1)	7 (24.1)	
I know enough about pregnancy and birth <u>psychology</u> to be proficient in my role as a health practitioner	Pre	0 (0.0)	10 (34.5)	11 (37.9)	7 (24.1)	1 (3.5)	1.07 (0.81)
	Post	0 (0.0)	0 (0.0)	5 (17.2)	18 (62.1)	6 (20.7)	
I understand the factors which contribute to a normal and natural birth	Pre	0 (0.0)	3 (10.3)	9 (31.0)	15 (51.7)	2 (6.9)	0.71 (0.76)
	Post	0 (0.0)	0 (0.0)	1 (3.5)	19 (65.5)	9 (31.0)	
It is important that midwives and obstetricians acknowledge the importance of my modality before I will be able to work with them effectively	Pre	0 (0.0)	0 (0.0)	5 (17.2)	14 (48.3)	10 (34.5)	-0.14 (1.01)
	Post	0 (0.0)	3 (10.3)	3 (10.3)	12 (41.4)	11 (37.9)	
I feel confident I know how to communicate with conventional maternity carers when appropriate	Pre	2 (6.7)	7 (23.3)	9 (30.0)	10 (33.3)	2 (6.7)	0.79 (1.08)
	Post	0 (0.0)	1 (3.5)	4 (13.8)	20 (69.0)	4 (13.8)	
I feel confident I know how to structure and word a professional referral letter	Pre	1 (3.3)	4 (13.3)	7 (23.3)	15 (50.0)	3 (10.0)	0.59 (0.82)
	Post	0 (0.0)	2 (6.9)	2 (6.9)	16 (55.2)	9 (31.0)	
I am aware of the models of care available to women birthing in Australia	Pre	3 (10.0)	10 (33.3)	7 (23.3)	7 (23.3)	3 (10.0)	1.41 (1.18)
	Post	0 (0.0)	0 (0.0)	0 (0.0)	19 (65.5)	10 (34.5)	
I feel confident I can answer general questions about complications, discomforts and disorders of pregnancy	Pre	3 (10.3)	5 (17.2)	8 (27.6)	11 (37.9)	2 (6.9)	1.07 (0.94)
	Post	0 (0.0)	0 (0.0)	1 (3.5)	18 (62.1)	10 (34.5)	
I feel confident I can provide support to a pregnant woman being treated by a conventional carer for complications, discomforts and disorders of pregnancy	Pre	1 (3.3)	7 (23.3)	8 (26.7)	13 (43.3)	1 (3.3)	1.07 (0.96)
	Post	0 (0.0)	1 (3.5)	0 (0.0)	17 (58.6)	11 (37.9)	
I understand the role and scope of practice of obstetricians in Australia	Pre	3 (10.0)	12 (40.0)	9 (30.0)	4 (13.3)	2 (6.7)	1.28 (1.13)
	Post	0 (0.0)	0 (0.0)	8 (27.6)	14 (48.3)	7 (24.1)	
I understand the role and scope of practice of midwives in Australia	Pre	1 (3.5)	13 (44.8)	6 (20.7)	7 (24.1)	2 (6.9)	1.39 (0.91)
	Post	0 (0.0)	0 (0.0)	1 (3.5)	19 (65.5)	9 (31.0)	
My knowledge of pregnancy physiology affects my ability to effectively collaborate with conventional carers	Pre	1 (3.3)	4 (13.3)	7 (23.3)	14 (46.7)	4 (13.3)	0.59 (1.18)
	Post	0 (0.0)	2 (6.9)	3 (10.3)	13 (44.8)	11 (37.9)	

<sup>a</sup> The responses provided by participants to either the pre-workshop or post-workshop surveys.

<sup>b</sup> The mean difference between responses in pre and post-workshop surveys for participants, where a change between categories is equal to 1 and a positive value indicates a move towards "Strongly agree", whilst a negative value indicates a move towards "Strongly disagree".

work with the conventional health professional effectively (mean = -0.14, SD = 1.01).

### 3.3. Practice behaviours

Prior to undertaking the course the participants reported frequently asking women about their conventional management of pregnancy-related health concerns (73.3%), and their expectations and plans for birth (63.3%), as well as discussing psychological issues related to pregnancy and birth (63.0%) (see Table 3). In comparison, they very rarely (or never) recommended a pregnant woman select a specific profession as their primary carer in pregnancy, or referred women to a specific conventional maternity health professional. It was also uncommon for the participants to caution pregnant women about known safety issues of a specific conventional treatment. Table 4 shows the relationship between

these practice behaviours and the practitioners' perceptions of their self-proficiency in maternity care. Based upon this analysis, the practitioners who felt more positive about their knowledge of pregnancy and birth physiology were more likely to ask women questions about their plans and expectations for birth ( $p = 0.02$ ), and enquire about their conventional management of pregnancy-related complications and disorders ( $p = 0.001$ ). A similar trend is also seen for those who felt positive about their knowledge of pregnancy and birth psychology. Those who felt less confident in their ability to structure and word a professional referral letter were more likely to provide advice regarding the management of pregnancy-related complications and discomforts prescribed by a conventional maternity health professional ( $p = 0.05$ ), whilst those who reported collaborating with conventional practitioners had a more positive perception of their knowledge of the models of care available in Australia ( $p = 0.01$ ), and felt confident they could

**Table 3**  
Participant's reported maternity care related practice behaviours ( $n = 30$ ).

Practice behaviour	Never/rarely (%)	Sometimes/often (%)
Ask pregnant women in their care about their expectations and plans for their birth	36.7	63.3
Been asked a question about pregnancy physiology by pregnant women in their care	50.0	50.0
Ask pregnant women in their care about conventional management of their complications or discomforts	26.7	73.3
Provided advice to pregnant women regarding the management of their complications or discomforts as prescribed by their conventional carer	43.3	56.7
Recommended that a pregnant woman select a specific profession as their primary carer in pregnancy	76.7	23.3
Referred pregnant women to a specific conventional maternity carer (and given the details of a particular practitioner)	76.7	23.3
Cautioned pregnant women in their care about known safety issues of a specific conventional treatment	70.0	30.0
Spoken to pregnant women in their care about psychological issues related to pregnancy and birth	37.0	63.0
Collaborate with a conventional maternity carer when providing care for a pregnant woman	46.7	53.3

**Table 4**

Relationship between participant's perceptions of self-proficiency and pre-workshop maternity care related practice behaviours (n = 30).

		Ask pregnant women in their care about their expectations and plans for their birth	Been asked a question about pregnancy physiology by pregnant women in their care	Ask pregnant women about conventional management of their complications or discomforts	Provided advice to pregnant women regarding management of complications or discomforts as prescribed by conventional carer	Recommended that a pregnant woman select a specific profession as their primary carer in pregnancy	Referred pregnant women to a specific conventional maternity carer (and given the details of a particular practitioner)	Cautioned pregnant women about known safety issues of a specific conventional treatment	Spoken to pregnant women about psychological issues related to pregnancy and birth	Collaborate with a conventional maternity carer when providing care for a pregnant woman
		Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)
I know enough about pregnancy and birth <u>physiology</u> to be proficient in my role as a health practitioner	Negative	25.0	25.0	25.0	37.5	0.0	12.5	0.0	25.0	0.0
	Neutral	60.0	60.0	100.0	60.0	20.0	20.0	40.0	60.0	40.0
	Positive	82.4	58.8	88.2	64.7	35.3	29.4	41.2	70.6	37.5
	p	0.02 <sup>a</sup>	0.26	0.001 <sup>a</sup>	0.44	0.15	0.64	0.10	0.10	0.12
I know enough about pregnancy and birth <u>psychology</u> to be proficient in my role as a health practitioner	Negative	30.0	40.0	40.0	50.0	20.0	30.0	20.0	40.0	10.0
	Neutral	90.9	54.6	90.9	63.6	27.3	27.3	36.4	72.7	40.0
	Positive	75.0	62.5	87.5	50.0	12.5	12.5	37.5	50.0	37.5
	p	0.01 <sup>a</sup>	0.62	0.02 <sup>a</sup>	0.51	0.73	0.66	0.65	0.30	0.27
I understand the factors which contribute to a normal and natural birth	Negative	33.3	0.0	66.7	66.7	33.3	33.3	0.0	66.7	0.0
	Neutral	66.7	66.7	77.8	55.6	33.3	33.3	33.3	44.4	25.0
	Positive	70.6	52.9	76.5	58.8	17.7	17.7	35.3	64.7	35.3
	p	0.46	0.13	0.92	0.94	0.62	0.62	0.47	0.58	0.44
It is important that midwives and obstetricians acknowledge the importance of my modality before I will be able to work with them effectively	Negative	-	80.0	-	-	-	-	-	-	-
	Neutral	100.0	45.8	100.0	80.0	40.0	40.0	60	60.0	60.0
	Positive	54.2	51.7	66.7	50.0	20.8	20.8	20.8	58.3	21.7
	p	0.06	0.16	0.13	0.22	0.36	0.36	0.08	0.95	0.09
I feel confident I know how to communicate with conventional maternity carers when appropriate	Negative	44.4	55.6	55.6	44.4	22.2	22.2	22.2	44.4	11.1
	Neutral	55.6	44.4	77.8	55.6	33.3	22.2	33.3	66.7	25.0
	Positive	83.3	50.0	83.3	66.7	16.7	25.0	33.3	58.3	41.7
	p	0.16	0.90	0.34	0.59	0.67	0.99	0.83	0.63	0.30
I feel confident I know how to structure and word a professional referral letter	Negative	80.0	40.0	80.0	100.0	40.0	40.0	60.0	80.0	40.0
	Neutral	57.1	42.9	71.4	28.6	28.6	14.3	14.3	28.6	16.7
	Positive	61.1	55.6	72.2	55.6	16.7	22.2	27.8	61.1	27.8
	p	0.69	0.75	0.93	0.05 <sup>a</sup>	0.51	0.57	0.22	0.17	0.69
I am aware of the models of care available to women birthing in Australia	Negative	46.2	38.5	61.5	46.2	15.4	15.4	23.1	38.5	16.7
	Neutral	57.1	42.9	85.7	57.1	42.9	28.6	28.6	85.7	0.0
	Positive	90.0	70.0	80.0	70.0	20.0	30.0	40.0	60.0	60.0
	p	0.09	0.30	0.43	0.52	0.37	0.67	0.68	0.12	0.01 <sup>a</sup>
I feel confident I can answer general questions about complications, discomforts and disorders of pregnancy	Negative	25.0	25.0	50.0	37.5	25.0	12.5	12.5	37.5	12.5
	Neutral	75.0	50.0	75.0	62.5	12.5	25.0	12.5	50.0	0.0
	Positive	76.9	61.5	84.6	69.2	30.8	30.8	53.9	69.2	46.2
	p	0.04 <sup>a</sup>	0.26	0.22	0.35	0.64	0.64	0.06	0.34	0.05 <sup>a</sup>
I feel confident I can provide support to a pregnant woman being treated by a conventional carer for complications, discomforts and disorders of pregnancy	Negative	37.5	37.5	50.0	25.0	12.5	12.5	25.0	37.5	12.5
	Neutral	50.0	50.0	62.5	62.5	25.0	12.5	0.0	50.0	0.0
	Positive	85.7	57.1	92.9	71.4	28.6	35.7	50.0	71.4	50.0
	p	0.05 <sup>a</sup>	0.68	0.07	0.10	0.69	0.33	0.05 <sup>a</sup>	0.28	0.03 <sup>a</sup>
I understand the role and scope of practice of obstetricians in Australia	Negative	53.3	33.3	60.0	46.7	13.3	20.0	33.3	46.7	13.3
	Neutral	77.8	66.7	100.0	77.8	33.3	44.4	44.4	66.7	44.4
	Positive	66.7	66.7	66.7	50.0	33.3	0.0	0.0	66.7	40.0
	p	0.48	0.19	0.09	0.31	0.43	0.13	0.17	0.54	0.20

Table 4 (Continued)

	Ask pregnant women in their care about their expectations and plans for their birth	Been asked a question about pregnancy physiology by pregnant women in their care	Ask pregnant women about conventional management of their complications or discomforts	Provided advice to pregnant women regarding management of complications or discomforts as prescribed by conventional carer	Recommended that a pregnant woman select a specific profession as their primary carer in pregnancy	Referred pregnant women to a specific conventional maternity carer (and given the details of a particular practitioner)	Cautioned pregnant women about known safety issues of a specific conventional treatment	Spoken to pregnant women about psychological issues related to pregnancy and birth	Collaborate with a conventional maternity carer when providing care for a pregnant woman
	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)
I understand the role and scope of practice of midwives in Australia	57.1 66.7 77.8 0.60	28.6 66.7 66.7 0.12	57.1 100.0 77.8 0.13	50.0 83.3 55.6 0.37	14.3 50.0 22.2 0.23	21.4 33.3 22.2 0.84	35.7 50.0 11.1 0.24	42.9 66.7 66.7 0.44	14.3 33.3 50.0 0.20
My knowledge of pregnancy physiology affects my ability to effectively collaborate with conventional carers	60.0 57.1 66.7 0.89	60.0 57.1 44.4 0.75	80.0 71.4 72.2 0.93	40.0 57.1 61.1 0.70	20.0 28.6 22.2 0.93	20.0 14.3 27.8 0.76	20.0 28.6 33.3 0.84	80.0 57.1 50.0 0.49	40.0 0.0 35.3 0.17

<sup>a</sup> Statistically significant association between perception of self-proficiency and practice behaviour ( $p \leq 0.05$ ).

answer general questions about pregnancy-related health concerns ( $p = 0.05$ ) and support women being treated conventionally for those health concerns ( $p = 0.03$ ). Confidence in these last two areas associated with conventional treatment was also associated with asking women about their expectations of birth more frequently. Similarly, practitioners who felt confident they can provide support to pregnant women being treated conventionally were also more likely to report cautioning pregnant women about the safety issues of a specific conventional treatment ( $p = 0.05$ ).

#### 4. Discussion

The results from this study reinforce the value of IPE in promoting practitioner confidence when engaging with health professionals from other disciplines, an outcome of particular importance for integrative medicine [27]. The findings from this study found that by increasing knowledge of maternity care provision, the participants felt more able to discuss safety issues with the women in their care. This is consistent with other IPE programs involving multi-disciplinary conventional care teams which has found participants tend to feel more confident to engage with practitioners from other disciplines [30,31]. In maternity care, a recent longitudinal assessment of undergraduate nursing, midwifery and medicine students partaking in an IPE program reported improved relationship-building skills, confidence in communication, and a willingness to collaborate up to 20 months post-program [32]. However, other research has reported that delivering this type of program within undergraduate curriculum does not achieve the intended impact on attitudes towards inter-professional teamwork [33]. This difference may be explained by a recent synthesis of systematic reviews of IPE which reported variations in content, duration and professional participation within IPE programs [34]. However, inconsistent outcomes from IPE related to interprofessional collaboration may also reinforce the value in providing IPE opportunities as postgraduate professional development programs rather than integrating IPE into undergraduate curriculum [35]. The results from our study highlights the participants' increased understanding of the role and scope of other health professionals involved in maternity care, which would thereby help clarify the participants' own role and scope and encourage CAM practitioners to perceive themselves as part of a healthcare team, rather than an independent or isolated practitioner. This link has been argued to be a key benefit of IPE programs [28,36] and would only benefit the development of collaborative interprofessional practice in CAM. Establishing this link could also have positive benefits for patient safety, given that many of the risks associated with CAM use are related to the use of CAM in place of more appropriate forms of conventional treatment, where this is necessary [19].

This research also highlights current deficits in CAM education. Low levels of confidence in not only pregnancy-care more generally but also in engaging with conventional maternity care providers and understanding conventional models of maternity care is a significant hindrance to effective collaboration and integration of CAM practitioners into health care teams. It is clear from this data that current CAM curriculum pays insufficient attention to the place of CAM practitioners in the existing health system and the avenues available to allow practitioners to effectively and collaboratively engage with conventional health care services. A number of aspects of CAM education in the local setting have been criticised recently [15] and the low level of confidence to collaborate and communicate with conventional care providers has also been reported elsewhere [25]. Alongside attention to core philosophies and principles of practice, current CAM practitioner clinical training focuses primarily on physiology, pathophysiology and disease management. Despite commentators

highlighting the alignment between CAM and other aspects of health care delivery including public health [37] and the importance of positive working relationships between CAM and biomedical practitioners in integrative health care settings [38] it appears this still requires further implementation in CAM curriculum. Alternatively, these deficits may be overcome through wider implementation of post-graduate IPE courses within the CPE program of CAM practitioners.

These deficits in CAM practitioner education impacting on collaborative practice and the corresponding need for IPE may also be reinforced by larger structural issues within the health system such as an absence of statutory regulation, particularly for those practitioner groups represented within the participants of this study. A recent evaluation of naturopathic education, for example, has highlighted significant variability in the duration and curriculum content of naturopathic courses [15]. Structural issues argued to underpin these inconsistencies include: heterogeneity in minimum course standards and recognition by professional associations; the availability of conversion courses – courses to upgrade a certificate or diploma qualification to a bachelor's degree – which do not incorporate professional practice content; sector competition between public and private education organisations; and indiscriminate government funding for naturopathic courses [15]. It is suggested that these issues may be overcome through the implementation of statutory government regulation [15]. Achieving statutory regulation may in turn create an educational environment which will encourage a stronger foundation for inter-professional practice and collaborative care amongst CAM practitioner training both within undergraduate curriculum and postgraduate professional development programs.

An important finding from the evaluation of this IPE program was the reduced need for participants to feel acknowledged and valued by conventional care providers to achieve effective collaboration following workshop completion. As there was no identified correlation between this perception and any of the other measured attitudes the underlying reason for this change is not clear. It is possible that the participants held stereotypical views of conventional care providers and this may play a role in their attitude prior to the workshop however other preliminary work examining the effects of IPE on stereotyping between professional groups has only served to reinforce stereotypical perceptions [39]. In contrast, other research has identified that clarifying inter-professional distinction through the process of IPE can promote participants to feel more confident in the role of their profession and thereby more able to collaborate harmoniously with other health professional groups [40]. This dynamic may be influencing the outcomes associated with the program reported here through which participants become more aware of the role and scope of practice of midwives and obstetricians. In doing so feel they appear more able to envisage their place in the healthcare team rather than relying on others to accommodate them. As this area of research is still emerging, clarification of this dynamic will require further future investigation.

The results from this study provide preliminary insights into the application of an established health education approach which has in recent times been identified as a useful tool to improve the CAM-conventional care interface. It is important to acknowledge the limitations to this study. The participants who attended the IPE workshop were self-selected and as such may have contributed to a selection bias whereby CAM practitioners who felt they needed training in maternity care were more likely to attend. The effects of random error may be possible due to the small sample size within the study. For this reason, inferential analysis has not been undertaken for this data. The small sample size also limits the generalisability of the findings, particularly given the variability in qualifications, scope of practice and regulatory frameworks for

different CAM professional groups. Likewise, the differences in maternity care practice and the context of CAM within health care provision in different settings will limit the transferability of the findings to other countries with significantly different practices. Nevertheless, the results from this research provide valuable insights into the effects of IPE on CAM practitioner attitudes and perceptions and highlight the potential value of applying IPE methods to promote inter-professionalism between CAM and conventional care providers.

## 5. Conclusion

The separation of CAM practice from conventional health care services can adversely affect clinical care delivery. Interprofessional education (IPE) is a method which is being embraced internationally as an effective tool for promoting inter-professional collaboration and communication in multi-disciplinary teams. This research highlights the applicability of the IPE model to the CAM maternity care context and its ability to encourage CAM practitioners to overcome any deficits in their professional training and feel competent and confident when engaging with conventional health professionals providing care to the same woman. Based upon these findings the application of IPE may provide the important changes to the existing CAM-conventional care interface which is needed to achieve effective, collaborative and integrated health care. As such, the role of IPE in CAM practitioner training demonstrates promise and warrants further investigation.

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