

**COMPLEMENTARY AND ALTERNATIVE MEDICINE AND CRITICAL CARE
NURSES: A SURVEY OF KNOWLEDGE AND PRACTICES IN AUSTRALIA**

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Complementary and alternative medicine and critical care nurses: A survey of knowledge and practices in Australia

Abstract

Background: The increasing and widespread use of complementary and alternative medicine in the general population requires health-care professionals to have a knowledge and appreciation of their use to ensure that decisions about care are appropriate, safe and meet patients' needs. This is also the case for critical care nurses. Presently, healthcare professionals including nurses have limited formal education on complementary and alternative medicine. Critical care nurses' role in relation to complementary and alternative medicine is important for two patient care reasons: some can adversely interact with conventional medicines and others can potentially improve patient's well-being. Australian critical care nurses' knowledge of complementary and alternative medicine is unknown.

Purpose: To identify Australian critical care nurses' assessment practices, attitudes, knowledge, and use of complementary and alternative medicine in practice.

Methods: A descriptive, exploratory online survey of Australian critical care nurses through a national critical care nursing database was undertaken during early 2011

Findings: Five of twenty-eight therapies were endorsed by the respondents (n = 379) most positively regarding legitimacy, knowledge, benefit and use in practice: exercise; diet; counselling/psychology; relaxation techniques; and massage. The findings also suggest that a specific area within patient files promotes the practice of identifying and recording current complementary and alternative medicine use and that the majority of respondents supported further education.

Conclusion: Critical care nurses although supporting a number of therapies also identified a need for increased knowledge and understanding. As the findings also suggest that patients

and families are requesting a range of therapies there is a need to investigate the provision of appropriate educational resources for critical care nurses to ensure safe and evidence-based care.

Keywords: Complementary Medicine; Alternative Therapies; Critical Care Nursing; Knowledge; Attitudes; Practice.

Introduction

The use of complementary and alternative medicine (CAM) among the general population in Australia is widespread (~70%)[1] and, as such, has the potential to impact on health-care decisions. Shorofi and Arbon[2] found 90.4% of hospitalised patients in surgical services in four hospitals in Australia indicated use of CAM. Complementary and alternative medicine has historically lacked a universal definition. It is generally accepted however that CAM represents an array of non-traditional healthcare practices outside conventional medicine.[3-6] The American National Centre for Complementary and Alternative Medicine[7] advocates that CAM is best understood as being comprised of five substantive areas: (1) mind-body interventions (e.g. meditation); (2) biologically-based interventions (i.e. vitamins, minerals, herbal medicines and nutritional supplements); (3) body-based interventions (e.g. massage); (4) energy-based interventions (e.g. Reiki); and, (5) alternative medical systems (e.g. Chinese medicine). The Australian National Institute of Complementary Medicine[8] adopted these defined areas, but commonly uses only the first four.

The use of CAM by the general public is also predicted to increase.[9, 10] A report from the Australian Bureau of Statistics[11] found that, in the period from 1995 to 2005, there was an increase of approximately 251,400 Australians visiting one of seven types of CAM practitioner (chiropractor, naturopath, acupuncturist, osteopath, herbalist, traditional

healer, hypnotherapist). Such increase in popularity and use of CAM by the general public strongly demands that health care professionals including CC nurses have the knowledge to assess, intervene and advise patients on effective and safe CAM health care practices.[4, 6]

Critically ill patients are bombarded with treatment regimes within a highly technical, sensory overloaded environment, and may find some relief from CAM that fits well within their cultural beliefs and has the potential to improve their well-being. CAM has the potential to improve patient's physical and psychological wellbeing including to promote sleep and rest,[12] and reduce anxiety[13] and discomfort[14] thus making the inclusion of CAM in care something to consider for an holistic approach to nursing in the ICU environment.

Of all the CAMs available, healthcare professionals appear to use lifestyle therapies and psycho-behavioural interventions most commonly. In a study of primary care physicians in America, the most commonly used CAMs were biofeedback and relaxation, counselling and psychotherapy, behavioural medicine and diet and exercise [15]. Lending support to those identified by Berman et al. [15] a more recent review of critical care nurses in the United States (n = 726), found the following CAMs as those most commonly used: diet, exercise, relaxation techniques and prayer[3]. A recent Australian study [16] of 322 nurses from 5 hospitals found 52.5% identifying having little knowledge of CAM. The use of CAM by healthcare professionals appears to be best predicted by level of training and attitude[3,15,16].

As more and more patients admitted to critical care (CC) areas are likely to have used or are currently using a range of CAM therapies given the widespread use in the general population[1], it is important that CC nurses are able to offer beneficial, evidence-based therapy options given that some CAM can adversely interact with CC patients' prescribed conventional care.[17, 18] As such, CC nurses need awareness of evidence-based CAM

modalities and their practical application, safety and efficacy. This study surveyed Australian CC nurses' assessment practices, attitudes, knowledge, and use of CAM in practice.

Methods

Design

A descriptive, exploratory online survey was undertaken during early 2011 to gather information to address the following research questions:

1. What information do CC nurses assess and document from patients regarding their current use of CAMs?
2. What are CC nurses' attitudes towards CAM?
3. What are CC nurses' current and desired knowledge of CAM?
4. What evidence do CC nurses require to recommend or use CAM?
5. What are the barriers to using CAM in CC practice?
6. Are there associations between demographic data and knowledge variables (gender, age, professional information, clinical setting, perceived barriers, attitudes regarding legitimacy and benefit, and knowledge) and CAM use in CC nursing practice?
7. What form of CAM education would CC nurses prefer?

Sample

A national sample of CC nurses was accessed through the Australian College of Critical Care Nurses (ACCCN) database to receive the survey. Ethics approval was granted by the University's Human Research Ethics Committee. As with the Tracy et al.[3] national survey, no restrictions on Australian participants or their work settings were made.

Survey

A literature search identified one survey instrument specifically designed for the CC nursing population.[3] This instrument was used for a national survey of CC nurses drawn from the American Association of Critical-Care Nurses by Tracy et al.[3] who gave permission for the survey to be used for this Australian study. Although the critical care researchers[3] piloted their survey and do not report any issues with it, there is no reported reliability or validity for the instrument. Although this is less than optimal, the survey provides a pre-tested instrument for this study cohort and facilitates discussion between the two groups of critical care nurses from Australia and USA. Some minimal changes were made to make it applicable to the Australian culture and population (for example, a question in relation to Native American Medicine was removed as it is specific to the USA population and the position designations of nursing roles in critical care were changed to represent the Australian context). A small pilot study (n=3) involving Australian critical nurses was implemented to ensure that the survey had face validity in this context. The instrument addresses: 1. Demographic and professional details; 2. Evidence required to recommend or use CAM; 3. Attitudes towards CAM; 4. Current or needed knowledge about CAM; 5. Current professional use of CAM; and 6. Barriers to the use of CAM in practice. Additional information was sought about the process and practice of assessing and documenting patients' current use of CAM on admission to the CC unit, and if and how CC nurses would like to learn about CAM. The total number of items in the survey was 31 and the pilot indicated that it took 15-20 minutes to complete.

CC nurses were presented with 28 CAM therapies and asked to rate each in terms of seven issues: 1. perceived legitimacy and 2. benefit in practice; 3. use, 4. recommendations and 5. requests for use by patients and families in practice; and 6. current levels of

knowledge/training in and 7. interest in gaining further knowledge/training. The following response codes were available: legitimate practice = legitimate practice, not legitimate practice, don't know; beneficial practice where 1 = harmful and 5 = beneficial; used in practice = have used, have considered using, have not considered using; recommended in practice = no you have not recommended, yes you have recommended; current knowledge/training = none, some, a lot; interest in further knowledge/training = none, some, a lot; and requested by patients/families = no not requested by patients/families, yes requested by patients families.

Data collection

The Australian College of Critical Care Nurses had 2,061 members with 1,413 identified as willing to be contacted via email for research purposes at the time of survey. An email was sent from ACCCN to these CC nurses offering them the opportunity to participate in the survey. A follow up email was sent two weeks later. Participants were asked to complete the survey on-line via a web link in the email.

Data analysis

Survey data were captured online via SurveyMonkey and exported into PASW Statistics 19.0 (SPSS Inc, Chicago, IL, USA) for statistical analysis. After data cleaning and screening, all continuous data were grouped into categorical data and open responses were coded. Basic frequencies were established for demographic variables and all survey items, and as there was only a small amount of missing data a pairwise deletion strategy was used [19]. Initial inspection of the data indicated that, of the 28 CAM therapies included in the survey, five were repeatedly rated most positively in terms of perceived legitimacy and benefit, use and recommendations in practice, and current levels of knowledge/training in and interest in

gaining further knowledge/training. Crosstabulations, with chi-square test statistic, were undertaken to explore the independent association between these top five CAM therapies and the following variables: gender; age; primary professional role; years' experience as a registered nurse (RN); years' experience working in CC; type/level of nursing credential; post-graduate qualification in CC nursing; primary clinical setting; perceived barriers to the use of CAM therapies; perceived legitimacy of CAM therapies; perceived benefit of CAM therapies; and current levels of knowledge/training in CAM therapies. The response categories were collapsed into the following for these crosstabulation analyses:

- used in practice and considered using or not used in practice;
- legitimate practice and not legitimate practice or don't know;
- beneficial and harmful or neutral; and,
- no current knowledge or training and some or a lot.

An additional crosstabulation, using the chi-square test, was also undertaken to explore the association between CC nurses' documentation of patient's current use of CAM therapies and the designation of space in clinical records to document such use. All statistical tests were considered significant if $p < 0.05$.

Results

A total of 385 CC nurses completed the survey. However, six were practising overseas and so deemed ineligible to be included in the analysis. This reduced the sample to $n=379$, which, out of 1,413 ACCCN members willing to be contacted for research purposes, equated to a 26.8% response rate.

Demographic profile

The full demographic profile of respondents is presented in Table 1, to summarise, respondents were predominantly female, white or caucasian and had a medium age of 46 years. They primarily worked in ICU as either a bedside nurse or a clinical nurse/RN, and had done so, on average, in excess of 15 years. It was most common for respondents to regard their work environment as moderately (55.2%) or mildly (34.6%) stressful.

Table 1

Sample characteristics

Characteristic	n (%) or mean/range
Gender (n=376)	
Female	86.7% (n=326)
Male	13.3% (n=50)
Ethnicity (n=375)	
White or Caucasian	94.9% (n=356)
Asian or Pacific Islander	2.9% (n=11)
Other	2.1% (n=8)
Age (n=360)	Median 46 years Range 24-67 years
Highest nursing qualification held (n=374)	
Graduate Certificate or Diploma in Nursing	42.2% (n=158)
Master's degree	25.4% (n=95)
Bachelor's degree	24.9% (n=93)
Doctoral degree	2.9% (n=11)
No degree in nursing	2.7% (n=10)
Other	1.9% (n=7)
Postgraduate university qualification in critical care nursing (n=372)	
Yes	69.1% (n=257)
No	30.9% (n=115)
Primary professional role (n=377)	
Bedside nurse	30.5% (n=115)
Clinical Nurse/Registered Nurse 3/4 or Level 2	29.7% (n=112)
Nurse Unit Manager/Charge Nurse/Clinical Nurse Coordinator/Nurse Practitioner	19.1% (n=72)
Nurse educator	8.8% (n=33)
University academic	4.0% (n=15)
Research coordinator/manager	2.7% (n=10)
Other	5.3% (n=20)
Years' experience as a RN (n=370)	Mean 20.6 years Range 1 month – 43 years
Years' experience working in CC (n=368)	Mean 15.4 year Range 1 month – 43 years
Primary practice/clinical setting (n=373)	
Intensive Care Unit	59.0% (n=220)
Combined Intensive Care Unit, Critical Care Unit and/or High dependency Unit	20.1% (n=75)
Emergency department	4.3% (n=16)
University/tertiary setting	2.9% (n=11)
Critical Care Unit	1.9% (n=7)

	Retrieval Services	1.3% (n=5)
	Liaison	1.3% (n=5)
	Cath Laboratory	1.1% (n=4)
	Other	8.0% (n=30)
Hours worked per week (n=366)		Mean 33.8 hours Range 4-80 hours
Size of hospital worked in (n=353)		
	Small (1-300 beds)	42.2% (n=149)
	Mid-sized (301-500 beds)	36.3% (n=128)
	Large (500+ beds)	21.5% (n=76)
Area hospital served (n=367)		
	Urban	47.7% (n=175)
	Suburban	35.7% (n=131)
	Rural	16.6% (n=61)
Australian state worked in (n=373)		
	Victoria	28.5% (n=108)
	New South Wales	22.2% (n=84)
	Queensland	17.7% (n=67)
	South Australia	12.1% (n=46)
	Western Australia	9.8% (n=37)
	Tasmania	3.4% (n=13)
	Australian Capital Territory	2.6% (n=10)
	Northern Territory	2.1% (n=8)

Note. Total sample n=379. Due to rounding, percentages may not add up to 100%.

Assessing and documenting patient's use of CAM

The majority of CC nurses reported documenting patient's current use of CAM therapies in his/her clinical record, with half (50.3%) stating that they sometimes recorded, and 23.1% stating that they always recorded, CAM use in patient files. Despite such purported practice, results suggested it was not common for patient files to include an area to formally document current CAM use. Indeed, just 10.1% of CC nurses indicated that patient's clinical files allocated such space. Crosstabulations showed a significant positive association between the presence of a designated space in the patient's clinical file and the CC nurse's documentation of the patient's CAM therapy use ($\chi^2 = 14.139$, $df = 2$, $p = 0.001$). Indeed, within those who never documented patient CAM use, a minority (2.0%) of CC nurses reported that there was space for documentation in clinical records. However, within those who always documented CAM use, a higher proportion (18.8%) stated that there was space provided for this in patient clinical records.

Attitudes towards CAM and use in practice

In terms of perceived helpfulness of CAM therapies in general to patients, families, nurses and other medical staff, CC nurses were mixed in their responses, which were mainly distributed between somewhat, moderately and very helpful. The largest proportion of CC nurses stated that CAM therapies were moderately helpful to patients and families (38.3% and 38.9% respectively).

The vast majority of CC nurses surveyed considered CAM therapies in general to be helpful for: stress (93.4%); anxiety (93.1%); restlessness (89.4%); pain/discomfort (89.1%); insomnia (87.6%); back pain (86.8%); and headaches (85.2%). CC nurses were less clear of helpfulness, however, for nausea and vomiting, with 24.4% and 37.3% (respectively) regarding CAM therapies to be unhelpful for these two symptoms and an additional quarter (23.1% and 26.7% respectively) being unsure.

The perceived legitimacy, overall effects (i.e., benefit or harm) and use in CC practice of the 28 CAM therapies presented to survey respondents varied markedly (see Table 2). In terms of legitimacy, this ranged from 98.0% of respondents perceiving exercise to be a legitimate practice to 16.3% perceiving electromagnetic/magnetic applications to be a legitimate practice. This was mirrored in responses for perceived benefit, which also saw 98.7% of respondents regard exercise to be a beneficial practice and 14.3% regarding electromagnetic/magnetic applications as beneficial. For use in practice, the range extended from 85.5% using exercise in their CC practice to just 1.2% using Qi Gong in practice.

When asked about their openness to the utilisation of CAM therapies in their CC practice, nine out of ten (90.6%) respondents indicated openness/eagerness, with the other 9.4% being either reluctant or not open to the use of CAM therapies. However, respondents were more reserved in their desire to increase availability of CAM to both patients and families in the CC setting and also the nursing staff for personal use. Specifically, 73.8%

indicated that they had a somewhat/moderate desire to increase CAM availability to patients and families in CC, and 69.0% indicated the same strength of desire to increase CAM availability to nursing staff for personal use. Approximately one in ten stated that they had no strong desire at all to increase CAM availability to either patients and families (8.3%) or nursing staff (10.6%).

Current and desired knowledge of CAM

CC nurse respondents typically had limited training in, or knowledge of, a number of specific CAM therapies. Indeed, for 22 of the 28 CAM therapies, the largest proportion of respondents indicated that they had no training/knowledge (see Table 2). However, there was modest to high levels of interest in gaining additional knowledge/training in the 28 CAM therapies, with the largest proportion of respondents indicating interest in acquiring further knowledge/training in 17 of the 28 therapies.

Diet and exercise were the CAM therapies CC nurses reported they had most knowledge/training in (89.6% and 89.0% respectively) and were also most interested in gaining further knowledge/training (87.7% both). Whilst Qi Gong was the CAM therapy which respondents had least knowledge/training in (8.7%), and were least interested in gaining further knowledge/training in, it is worth noting that a third of the sample did want to know more (32.7%).

CC nurses had chiefly sought to gain knowledge of CAM therapies from: the internet (79.7%); other providers (79.1%); nursing, health, medical journals (76.8%); peers (76.4%); and mass media such as television, radio, newspapers, magazines (61.2%). Fewer respondents had sought information from physicians (39.8%) and through coursework or formal training (38.3%).

Respondents indicated a preference for CAM education involving face-to-face sessions (46.4%) and, to a slightly lesser extent, on-line learning (40.1%). Paper-based modules were the least popular, with less than one in ten CC nurses (7.3%) endorsing this as the preferred mode of CAM education. A minority of respondents (3.0%) suggested a combination of teaching methods involving face-to-face, on-line and paper-based learning.

Recommendations and requests for CAM therapies in CC practice

CC nurses, in the main, appeared to not readily recommend CAM therapies in their CC practice. Specifically, for 22 of the 28 therapies, the largest proportion of respondents reported that they had not recommended the CAM therapy in practice (see Table 2). CC nurses also reported that, in their experience, CAM therapies had not been frequently requested by CC patients or families. Indeed, whilst diet was the CAM therapy seemingly most requested (66.4%), a third of the sample still reported not having ever been asked for this CAM therapy by a patient or their family (see Table 1).

Respondent nurses considered the same types of evidence important when recommending or using either an orthodox (traditional or conventional) treatment or CAM therapy. Specifically, the top five types of evidence considered somewhat important/essential for recommending or using both conventional or alternative medicine were: clinical trials (orthodox = 98.9%; CAM = 94.8%); proven mechanism (orthodox = 98.3%; CAM = 96.5%); epidemiologic data (orthodox = 93.7%; CAM = 89.7%); published case studies (orthodox = 93.4%; CAM = 89.6%); and proposed mechanism (orthodox = 89.5%; CAM = 86.5%). In contrast, CC nurses regarded personal use (orthodox = 42.6%; CAM = 41.7%) and colleague recommendation (orthodox = 34.0%; CAM = 33.2%) as types of evidence unimportant/somewhat unimportant when considering using orthodox treatments or CAM therapies.

Barriers to using CAM in critical care practice

Lack of staff training (91.8%) and lack of knowledge regarding appropriateness of CAM therapies (89.8%) were identified by the vast majority of CC nurses as barriers experienced in his/her institution to the use of CAM therapies. This was closely followed by lack of appropriate equipment (87.1%) and unavailability of credentialed providers (86.4%). Approximately three-quarters of respondents highlighted lack of time (76.4%) as an impediment to CAM use, and 71.5% believed institutional concerns about legal issues was also a hindrance. Respondents considered physician reluctance in utilisation (70.5%) to be more of a barrier to CAM therapy use than peer reluctance (61.9%) and much more than their own reluctance (45.5%). Finally, 56.3% of respondents considered lack of reimbursement as a barrier to CAM therapy use.

CAM therapies and associations between CC nurses use, knowledge and practice

As shown in Table 2, for six of the seven issues, the following five therapies were endorsed most positively: exercise; diet; counselling/psychology; relaxation techniques; and massage. The exception to this was requests for use in practice by patients and families, which saw prayer and spiritual direction become one of the top five CAM therapies, replacing relaxation techniques.

Table 2

CAM therapies and CC nurses' perceptions of legitimacy and benefit; use, recommendations and requests from patients and families in practice; current levels of knowledge/training and interest in gaining further knowledge/training: Order of frequency (ascending) and percentage (%) of responses on survey

CAM Therapy	Legitimate practice	Beneficial practice	Used in practice	Recommended in practice	Current knowledge/training	Interest in further knowledge/training	Requested by patients/families
	Rank order /(%)	Rank order /(%)	Rank order /(%)	Rank order /(%)	Rank order /(%)	Rank order /(%)	Rank order /(%)
Exercise	1/(97.9)	1/(98.7)	1/(85.5)	1/(88.8)	2/(89.0)	~1/(87.7)	5/(57.4)
Diet	2/(96.8)	2/(96.4)	2/(85.4)	2/(85.7)	1/(89.6)	~1/(87.7)	1/(66.4)
Counselling/Psychology	3/(93.7)	4/(87.1)	5/(62.3)	3/(79.4)	5/(61.8)	5/(72.6)	3/(62.4)
Relaxation Techniques	4/(91.5)	5/(85.8)	4/(64.3)	5/(71.6)	4/(69.7)	4/(83.0)	7/(48.2)
Massage	5/(91.2)	3/(90.8)	3/(69.5)	4/(74.1)	3/(73.9)	3/(85.4)	4/(59.7)
Meditation	6/(75.8)	6/(74.9)	12/(33.8)	10/(36.1)	7/(48.5)	6/(68.8)	14/(29.2)
Acupuncture	7/(74.4)	10/(65.6)	20/(12.8)	18/(14.4)	17/(25.8)	10/(61.5)	18/(22.0)
Pet Therapy	8/(74.3)	8/(70.2)	11/(35.5)	8/(39.7)	13/(33.8)	12/(56.6)	8/(44.6)
Music Therapy	9/(69.8)	7/(72.3)	6/(51.2)	6/(57.7)	10/(41.4)	8/(66.2)	6/(52.7)
Chiropractic/Manipulative Therapy	10/(66.0)	12/(52.9)	16/(15.3)	15/(18.4)	~14/(26.5)	~22/(40.9)	17/(22.8)
Behavioural Medicine	11/(60.9)	15/(49.0)	15/(16.7)	16/(16.3)	16/(26.3)	16/(53.2)	21/(10.8)
Tai Chi	12/(60.4)	13/(52.5)	25/(6.3)	23/(7.8)	22/(18.8)	~19/(44.8)	26/(5.6)
Therapeutic Touch	13/(56.6)	9/(68.6)	8/(43.3)	9/(36.9)	8/(48.0)	9/(66.0)	~15/(26.6)

Prayer and Spiritual Direction	14 /(54.2)	11/ (55.9)	10 /(39.3)	7 /(47.2)	11 /(37.5)	25 /(39.1)	2 /(63.5)
Hypnotherapy	15 /(52.8)	21 /(42.0)	27 /(5.4)	21 /(10.2)	27/ (14.2)	26 /(38.7)	23 /(10.3)
Acupressure	16 /(51.6)	17 /(47.5)	17 /(14.9)	19 /(12.3)	~14 /(26.5)	14 /(54.2)	19 /(14.6)
Art Therapy	17 /(48.5)	14 /(49.5)	18 /(13.7)	17 /(15.0)	19 /(22.2)	~19 /(44.8)	20 /(12.9)
Indigenous Medicine	18 /(47.8)	19 / (43.6)	13 /(31.3)	13 /(24.8)	12 /(34.4)	11 /(56.7)	12 /(30.4)
Aromatherapy	19 /(45.7)	16 /(48.5)	9 /(41.7)	11 /(34.0)	9 /(46.0)	13 /(54.8)	9 /(40.9)
Megavitamins	20 /(44.2)	18 /(46.4)	7 /(46.5)	12 /(30.2)	6 /(56.2)	7 /(66.3)	11 /(39.1)
Herbal Medicine	21 /(43.2)	22 /(39.5)	19 /(13.4)	20 /(10.7)	20 /(21.6)	15 /(53.5)	10 /(39.8)
Traditional Chinese Medicine	22 /(41.7)	20 /(42.2)	22 /(8.3)	26 /(4.2)	23 /(16.5)	17 /(50.2)	13 /(30.2)
Guided Imagery	23 /(38.8)	23 /(35.9)	14 /(19.3)	14 /(19.4)	18 /(25.0)	~22 /(40.9)	22 /(10.5)
Homeopathic Medicine	24 /(33.7)	24 /(30.9)	21 /(10.7)	22 /(8.2)	21 /(20.7)	21 /(43.7)	~15 /(26.6)
Biofeedback	25 /(31.7)	26 /(23.7)	26 /(6.1)	25 /(5.5)	~24 /(16.0)	24 /(40.4)	27 /(4.8)
Environmental Medicine	26 /(29.3)	25 /(24.6)	23 /(7.9)	24 /(6.9)	26 /(14.7)	18 /(45.0)	25 /(7.0)
Qi Gong	27 /(22.5)	27 /(23.0)	28 /(1.2)	28 /(3.0)	28 /(8.7)	28 /(32.7)	28 /(3.6)
Electromagnetic/Magnetic	28 /(16.3)	28 /(14.5)	24 /(6.8)	27 /(3.1)	~24 /(16.0)	27 /(33.5)	24 /(9.2)
Applications							

Note. CAM = Complementary and Alternative Medicine. CC = Critical Care. ~= tied ranking. Bolded values indicate the five CAM therapies endorsed the most by survey respondents.

A series of crosstabulations were undertaken to explore whether the use of 1.diet, 2.exercise, 3. massage, 4. relaxation techniques and 5. counselling/psychology (i.e., the top five CAM therapies) by CC nurses in their practice, were associated with a range of demographic and professional data, and key survey questions such as perceived barriers to use, legitimacy and benefit, and current levels of knowledge/training.

In terms of demographic and professional-related data, analysis showed that there were no statistically significant relationships between the use of any of the five CAM therapies and: gender, age, type/level of nursing qualification; post-graduate qualification in CC nursing; primary professional role; number of years' experience in CC nursing; and number of years' experience as a RN; and primary clinical setting.

As regards to the relationship between perceived barriers to the use of the five CAM therapies and actual reported use of the therapies in practice, the vast majority of results were non-significant indicating no association. The two exceptions were the lack of knowledge regarding appropriateness of CAM therapies and exercise ($\chi^2 = 6.976$, $df = 1$, $p = 0.022$ Fisher's Exact Test Statistic); and lack of staff training and massage ($\chi^2 = 6.936$, $df = 1$, $p = 0.008$). For both findings, crosstabulations showed that CC nurses who, despite reporting that they had experienced barriers to the use of CAM in their institution, were still more likely to report using CAM in their practice than those who did not report experiencing barriers. For the former result, within those CC nurses who considered a lack of knowledge regarding appropriateness of CAM therapies as a barrier, 88.1% reported using exercise for patients in their CC practice. Within those CC nurses who did not think a lack of knowledge regarding appropriateness of CAM therapies was a barrier, a slightly lower proportion (71.0%) reported use of exercise in their practice. For the latter result, within those nurses who identified lack of staff training as a barrier to the use of CAM therapies, 73.0% still reported using massage

in their practice. Within those CC nurses who did not think lack of staff training was a barrier, a lower proportion (48.0%) reported using massage in their nursing.

In terms of the relationship between CC nurses' use of the five CAM therapies and their perceptions of the therapies' legitimacy and benefit, and their current knowledge/training, analysis revealed that there were statistically significant associations (see Table 2). For all of the five CAM therapies, crosstabulations indicated that those nurses who perceived the therapy to be a legitimate practice, be of benefit and had either some or a lot of current knowledge/training, were more likely to report using the therapy in practice. It should be noted that the relationship between the use of exercise and the perceived benefit of exercise was just outside of statistical significance ($p = 0.051$).

Table 3

Chi-square test statistics (χ^2 , df, p value =) of CC nurses' reported use of exercise, diet, counselling/psychology, relaxation techniques and massage in practice, by their perceptions of each therapy's legitimacy and benefit, and their current levels of knowledge/training in the CAM therapy

		Used in practice				
		Exercise χ^2 , df, p value =	Diet χ^2 , df, p value =	Counselling/Psychology χ^2 , df, p value =	Relaxation techniques χ^2 , df, p value =	Massage χ^2 , df, p value =
Legitimate practice	Exercise	19.064, 1, =.001 ¹ *				
	Diet		31.599, 1, =.0001**			
	Counselling/Psychology			17.603, 1, =.000**		
	Relaxation techniques				18.619, 1, =.000**	
	Massage					24.554, 1, =.000**
Beneficial practice	Exercise	7.139, 1, =.051 ¹				
	Diet		17.904, 1, =.0011**			
	Counselling/Psychology			21.147, 1, =.000**		
	Relaxation techniques				26.479, 1, =.000**	
	Massage					16.002, 1, =.000**
Current knowledge/ training	Exercise	35.125, 1, =.000**				
	Diet		13.967, 1, =.001 ¹ *			
	Counselling/Psychology			29.477, 1, =.000**		
	Relaxation techniques				60.166, 1, =.000**	
	Massage					30.351, 1, =.000**

Note. CAM = Complementary and Alternative Medicine. CC = Critical Care. ¹ = Fisher's Exact Test Statistic reported as there were cells with expected counts <5.

* = $p < 0.01$. ** = $p < 0.001$.

Discussion

A national population based study[1] found 68.9% of the Australian population used at least one of the 17 CAM modalities identified and yet less than half always informed their medical practitioner. The reasons given for not reporting CAM usage to their practitioners were that patients considered it unnecessary and they were not asked about their usage. In this current study, 23.1% of CC nurses reported that they ‘always’ recorded CAM use and that only around 10% indicated that patient’s clinical files allocated room for formal documentation of current CAM therapy use and when this was the case it was more likely that CAM use was documented.

There is the potential for some CAM to cause adverse interactions with conventional medicine. Elmer et al.[17] found in their five year study that 5.8% of the 5,052 participants took combinations of CAM and conventional medications that resulted in adverse reactions. Patients coming to ICU as a planned admission are instructed to cease some herbal medicines and nutritional supplements two weeks prior to admission but many (30-60%)[20] are emergency admissions thus creating potential risks for the patient if herbal medicines and nutritional supplements or other CAM use is not documented in the patients’ file.

The findings from this current study support previous assertions that nurses have limited knowledge of and formal education on CAM [3, 16, 21]. This gap between the high patient use and nurses’ limited formal knowledge of CAM is worrying,[16, 21] especially in light of studies which show that a large proportion of those patients who use CAMs fail to voluntarily report their usage to healthcare providers.[1, 9, 15] Without at least a basic knowledge of CAMs, healthcare professionals cannot engage in discussions with their patients about the possible adverse effects of combining conventional care and CAM and, thus, patient wellbeing may well be jeopardised.[22, 23]

Given the consumer driven development towards holistic and integrative healthcare[24], CC nurses' CAM knowledge and practice should not be limited to adverse effects and interactions, but should include proactive recommendation of beneficial, evidence-based CAM that can improve an individual's physical and psychological health. Australians and possibly ICU patients are using a large variety of CAM modalities with a recent Australian study of hospitalised patients[2] finding the five most common to be (starting with most popular): non-herbal supplements, massage therapy, chiropractic, music therapy and self-prayer for health reasons/spiritual healing. As with this current study the top five modalities from their national survey of CC nurses through the the American Association of Critical-Care Nurses were diet, exercise, relaxation techniques, prayer and massage[3]. The five modalities that emerged as most positively endorsed in this recent study of CC nurses in Australia were similar however counselling/psychology was included rather than prayer. It maybe that CC nurses in Australia saw this outside their area of practice. Although in this current study, CC nurses did include prayer and spritual direction in their top five modalities patients and families requested, and this replaced relaxation techniques.

Given the evident popularity of CAM amongst the general public, there is a growing recognition of the need for more education and training of nurses in CAM.[21, 25] Educational institutions are beginning to incorporate CAM components into curricula[26, 27]and even offer fellowships in integrative medicine.[28] Ongoing professional development of healthcare professionals is also becoming more common. For example, a prototype module ('CAM and the Prostate Cancer Patient') has been developed for a web-based program for nurses and healthcare professionals working with cancer patients.[29] Initial evaluations of this prototype found that the module increased nurses and health educators' knowledge and self-efficacy in CAM and in answering patient's queries. In order

to maintain pace with the burgeoning popularity of CAM with the general public, it is important that an appropriate medium through which to convey the learning message is chosen so as to maximise quickly the success of any resource. The nurses in this current survey indicated that they would like to have further education on CAM and would prefer that this was via face-to-face sessions or online. As such, learning resources based on these preferences and designed for adult learning and grounded in assumptions set out in Knowles' theory[30]: a need to know; a responsibility for own learning; the role of experience in learning; a readiness or applicability of the information to a real life situation; a motivation to learn; and problem centred learning with real life problems would greatly benefit CC nurses and ultimately patients.

There are a number of limitations when using an on-line self-report survey. CC nurses most interested in CAM may have responded to the survey causing some degree of sampling bias. Added to this, the sample of CC nurses was chosen through a national body and these nurses may take more interest in professional and research matters. However, the comparability of results with the Tracy et al [3] study may minimize the effects of these limitations. Self-report surveys on practice issues provide no opportunity to observe practice to validate reports by participants although as Norwood [31] reports they are frequently used to gather information about knowledge, behaviours, and opinions.

Conclusions

This paper reports on the findings of a national survey examining CC nurses' knowledge, attitude and use of CAM in practice. One finding from this study suggests that a specific area within patient files promotes the practice of assessing, identifying and recording all (not just herbal medicines/nutritional supplements) current CAM use. As well, the findings indicate that there are five CAM modalities endorsed most positively: exercise; diet;

counselling/psychology; relaxation techniques; and massage. It also found that further education on CAM via face-to-face sessions or online was supported by CC nurses. Given the evident popularity of CAM amongst the general public, this support for the need for more education and training warrants further research to investigate the effect of education as an intervention.

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