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# Australian Hospital Pharmacists' Attitudes, Perceptions, Knowledge and Practices of CAMs

Lesley A Braun, Marc M Cohen

## ABSTRACT

**Background:** Although evidence suggests that some complementary and alternative medicines (CAMs) are beneficial they can also cause adverse effects. Hospital pharmacists are responsible for ensuring patient safety and wellbeing yet little is known about their perceptions, knowledge and practices of CAMs.

**Aim:** To explore hospital pharmacists' attitudes, perceptions, knowledge and practices of CAMs.

**Method:** An anonymous, self-administered questionnaire was distributed to pharmacists at four hospitals in Melbourne.

**Results:** 107 completed surveys were received (76% response). 87% of pharmacists thought CAMs were unsafe and required monitoring yet 45% did not routinely ask patients about CAM use. 74% thought they had insufficient knowledge to identify when CAMs could affect patient safety and 88% thought CAMs needed more hospital-based research. Pharmacists were cautious about CAMs and concerned about safety, efficacy, cost and regulatory issues. 62% had received training about CAMs, and 83% were interested in further training. A mean score of 39.9% (SD 19.9) was obtained in the knowledge section. Several complementary therapies were considered useful, notably acupuncture.

**Conclusion:** Hospital pharmacists are responsible for the safe and appropriate use of medicines however this does not routinely extend to the use of CAMs. Despite receiving some education about CAMs, a lack of confidence and knowledge was identified. Clear guidelines and education is needed to improve communication about CAMs and optimise patient care. Hospital pharmacists have concerns about CAMs and would support further hospital-based research.

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## INTRODUCTION

Complementary and alternative medicines (CAMs) make up a sizeable component of the Australian health sector and involve the use of medicinals (e.g. herbal medicines) and the practice of complementary therapies (CTs).<sup>1,2</sup> Approximately 1.9 million herbal medicine and naturopathic consultations occur annually in Australia.<sup>1</sup> In 2004, non-medically prescribed CAMs were used by 52% of the population.<sup>2</sup> While the use of CAM is common, many self-treat, do not routinely disclose use to their general practitioners and use it as an adjunct to conventional care rather than as a true alternative.<sup>3-5</sup>

In recognition of its widespread use, the Australian Pharmaceutical Advisory Council's guidelines specify that CAMs be included as part of a standard medication history. Professional associations in North America, have also responded. Between 2000 and 2004, the American Society of Health-System Pharmacists, the American College of Clinical Pharmacy and the Canadian Society of Hospital Pharmacists recommended that the pharmacy profession actively embrace CAMs as part of their scope of practice.<sup>6</sup>

Hospital patients use CAMs prior to admission, during the perioperative period and while in hospital, with few disclosing use to hospital staff.<sup>7-10</sup> According to one Melbourne study, 20% of elective surgical patients used vitamin supplements and 14% used herbal medicines and, in keeping with overseas studies, disclosure was poor with only 28% of herbal medicine users informing doctors.<sup>7</sup> In a study of inpatient use, 36% of the surveyed population took CAMs while in hospital; 74% were self prescribed and 51% were not recorded on the medication chart.<sup>9</sup>

Over the last decade, research into the pharmacological effects of CAMs has grown considerably. When combined with case reports and data from pharmacokinetic and pharmacodynamic studies, it is apparent that over-the-counter CAMs have the potential to cause adverse effects and drug interactions through mechanisms such as cytochrome inhibition or induction, P glycoprotein inhibition or induction, and altering absorption and excretion.<sup>11,12</sup> Unsupervised CAM use can lead to complications such as haemorrhage, tissue rejection, and unexpected responses to standard therapy as a result of reduced drug efficacy or increased toxicity.<sup>11,13,14</sup> Withdrawal of CAMs can also be problematic, particularly if an effective treatment is ceased and symptoms return.

Despite having the potential to induce adverse effects, there are also a number of CAMs for which there is supportive evidence. Examples include *Serenoa serrulata* and *Pygeum africanum* for benign prostatic hypertrophy, coenzyme Q10 in hypertension and glucosamine in osteoarthritis.<sup>15-18</sup>

A review of studies in the international peer-reviewed literature on pharmacists' attitudes, knowledge, education and behaviours regarding CAMs, revealed that the majority have been conducted in the US, several in Canada, one in Singapore and one in Australia.<sup>19-30</sup> All the studies focused on community pharmacists, few included hospital pharmacists and few had a response rate above 60%, thereby limiting the generalisability of the results.<sup>21,24,29,30</sup> Due to the widespread use of CAMs, their potential to induce adverse effects and the paucity of information about hospital pharmacists, this study was undertaken to explore hospital pharmacists' attitudes, perceptions, knowledge and practices of CAMs.

## METHOD

Following a review of the literature and interviews with hospital pharmacists and doctors, four studies were used as the basis for the design and development of the survey form.<sup>29,31-33</sup> The form consisted of multiple-choice and multiple-response questions with space for additional comments. Complementary medicines were defined as: herbal medicines, vitamin and mineral supplements and food supplements which can be bought in supermarkets, pharmacies, health-food stores, the Internet, mail order companies or from practitioners, excluding CTs such as massage or acupuncture. The survey asked about:

- *characteristics* such as age, gender, years in practice, direct involvement in patient care, average number of patients seen each week and previous training on CAMs;
- *behaviours* such as communication, information seeking and personal use of CAMs and CTs;
- *perceptions* of the usefulness and harmfulness of 15 CTs available in Australia;<sup>32</sup>
- *attitudes* to CAMs;

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- *knowledge* of the efficacy and safety of 11 CAMs (chamomile, coenzyme Q10, echinacea, fish oils, garlic, ginger, ginkgo, glucosamine, St John's Wort, valerian, vitamin E) selected for their popularity and/or potential to induce adverse events. Three studies were used as a basis for this section.<sup>21,26,29</sup> Respondents were asked to match the listed properties to the listed CAMs. On 20 May 2005, the AltMedDex database was used to obtain answers to the knowledge section.<sup>34</sup> Participants were able to mark a box to indicate if they were unsure of a specific answer.

The study was conducted from February to May 2005 at four tertiary Melbourne hospitals (Austin, Alfred, Frankston, Cabrini) after it was pre-tested with a convenience sample and approval was obtained from the Human Research Ethics Committees at RMIT University at all sites. The anonymous, self-administered questionnaire was distributed to all pharmacists (n = 140) working at the hospitals at the commencement of the study. Pharmacists not directly involved in patient care were asked to omit questions about patient communication. No inducements to participate were provided.

Data was coded and analysed using Statistical Package for the Social Sciences (version 13). Chi-square tests were used to analyse categorical variables, and ANOVA, paired t-tests and Pearson r correlations used to analyse continuous variables. Results were considered significant for p < 0.05.

## RESULTS

Surveys were distributed to 140 pharmacists with 107 (76% response rate) returning completed questionnaires. The majority of respondents were female (78%) and directly involved in patient care (82%). The mean age was 34.9 years (SD 12.3), the mean number of years in practice was 12.4 (SD 11.9) and the mean number of patients seen each week was 72 (SD 97). The age and gender characteristics of the sample were consistent with the national pharmacy labour force.<sup>35</sup>

### Communication

Table 1 summarises responses indicating how likely pharmacists were to ask patients about their use of CAMs, their confidence in identifying unsafe outcomes, and how often they used

information resources to check safety. Young pharmacists (< 25 years) were significantly more likely to ask patients about CAMs than older pharmacists (≥ 35 years) (p < 0.001). There was no significant relationship between knowledge scores and frequency of enquiry (r = -0.087; p = 0.417) or how often respondents checked for adverse effects and drug interactions and frequency of inquiry (r = -0.144; p = 0.187).

The main reasons for not asking about CAM use were forgetting to ask (58%), assuming patients will tell without being asked (27%), not having the opportunity (23%), not having sufficient knowledge (22%), not thinking it relevant (22%) or because it was too time consuming (17%). If patient use of CAMs was identified, 53% of pharmacists advised patients to cease taking specific CAMs, 35% recommended they consult another health practitioner, 24% did not feel confident to advise patients, 9% advised to keep taking all CAMs and 7% advised to cease all CAMs. Thirteen respondents expressed concerns about interactions and three stated that hospital protocol advised them to tell patients to stop using all CAMs.

Of those who asked patients about CAMs, 59% recorded usage information in the patient history, 28% recorded the information in the medication chart and 3% did not record the information. Some (29%) verbally informed the relevant surgeon, anaesthetist or physician and 28% verbally informed other health professionals such as dietitians or other pharmacists.

### Attitudes

Attitudes to statements about CAMs indicate pharmacists are cautious about CAMs and concerned about safety, efficacy, regulatory and cost issues (Table 2). Eighty-seven per cent of respondents agreed with the statement that CAMs are potentially dangerous and need to be monitored, 88% agreed that CAMs required more hospital-based research and 92% agreed that CAM practitioners required tighter regulation.

### Training, Information and Knowledge

Sixty-two per cent of respondents had received training about CAMs and CTs, and 83% were interested in further training. Undergraduate lectures were the main source of education (45%) followed by self-learning (24%), lectures/seminars

**Table 1. Pharmacists' confidence and use of CAM resources and their frequency of patient inquiry about CAM use**

Frequency of asking patients	Asking patients about CAM use (n = 89)	Identifying potential adverse outcomes* (n = 87)	Checking for adverse effects and drug interactions (n = 86)
Always	26 (29%)	3 (3.5%)	21 (24%)
Often (> 60% of the time)	23 (26%)	20 (23%)	18 (21%)
Sometimes (30-59%)	14 (16%)	34 (39%)	28 (33%)
Occasionally (5-29%)	11 (12%)	22 (25%)	14 (16%)
Rarely (< 5%)	9 (10%)	7 (8.1%)	5 (5.8%)
Never	6 (6.7%)	1 (1.2%)	0

\*How often do you feel confident that you have sufficient knowledge to identify when CAMs could adversely affect patient care?

**Table 2. Pharmacists' attitudes and perceptions of CAMs**

Attitudinal statements	Strongly agree	Agree	Agree nor disagree	Disagree	Strongly disagree
CAMs are generally a waste of time and money (n = 105)	3 (2.9%)	32 (31%)	30 (29%)	38 (36%)	2 (1.9%)
CAMs are potentially dangerous and need to be monitored (n = 107)	22 (21%)	71 (66%)	11 (10%)	3 (2.8%)	0
CAMs offer a false sense of hope and exploit vulnerable individuals (n = 105)	8 (7.6%)	35 (33%)	41 (39%)	21 (20%)	0
CAMs offer patients cost effective treatment options (n = 104)	1 (1.0%)	13 (13%)	28 (27%)	51 (49%)	11 (11%)
CAMs need more hospital-based research (n = 106)	45 (43%)	48 (45%)	10 (9.4%)	1 (0.94%)	2 (1.9%)
CAMs are something that most of my colleagues would consider (n = 104)	2 (1.9%)	15 (14%)	45 (43%)	36 (35%)	6 (5.8%)
Regulations for CAM practitioners need to be tightened (n = 106)	42 (40%)	55 (52%)	8 (7.6%)	1 (0.94%)	0

(16%) and/or postgraduate lectures (10%); and 2% had undertaken formal study, i.e. certificate, diploma or degree in CAM. All the respondents reported referring to information resources about CAMs and CTs. The most popular sources were Medline (67%), reference texts (65%), Internet (59%), colleagues (39%), peer-reviewed journals (38%), company literature (32%), seminars/conferences/lectures (30%), CAM practitioners (15%), and family and friends (10%).

The knowledge section of the survey was attempted by 95% of respondents (n = 102) with a mean score of 39.9/100 (SD 19.9). Those who reported feeling confident more frequently in their knowledge of CAM safety were significantly more likely to attain greater knowledge scores (r = -0.429; p < 0.001). There was no significant relationship between knowledge scores and age (r = -0.09; p = 0.393), how often respondents asked patients about CAMs (r = -0.087; p = 0.417) or how often respondents checked for adverse effects and drug interactions (r = -0.144; p = 0.187).

### Personal Use and Perceptions

The CTs most commonly used by respondents in the previous 12 months were vitamin/mineral therapy (27%) and massage (26%) and, to a lesser extent, Chinese medicine (10%), yoga (10%), herbal medicine (9%) and spiritual healing (9%). Respondents also expressed interest in receiving treatment with CTs in future, notably massage (64%), meditation (60%), vitamin/mineral therapy (51%), acupuncture (51%), yoga (50%), aromatherapy (40%), herbal medicine (39%), chiropractic (37%), Chinese medicine (32%), osteopathy

(28%), naturopathy (20%) and reflexology (20%). Pharmacists' perceptions of the usefulness of 15 CTs and their perceptions of their potential harmfulness are presented in Figures 1 and 2.

### DISCUSSION

Good communication between health professionals and patients is an essential part of providing safe and effective health care. Although studies have been conducted exploring the communication barriers preventing discussions about CAM between patients and doctors, little is known about pharmacists.<sup>36</sup> US studies with community pharmacists have produced inconsistent results with one study identifying that pharmacists rarely ask patients about CAM use compared to another reporting 52% regularly ask patients about CAMs.<sup>20,22</sup> In our study, 29% of pharmacists reported 'always' asking patients about CAMs and 26% 'often' asked patients. Surprisingly, younger age was associated with more frequent patient inquiry whereas having greater knowledge of CAMs was not.

Lack of practitioner inquiry combined with lack of patient disclosure has been described as a 'don't ask, don't tell' culture in which communication barriers are continually reinforced.<sup>31</sup> Not only is this situation potentially dangerous, it also means a missed opportunity to learn from patients about their reasons for using CAMs. This can reveal important details about their health and effectiveness of current treatments.

As the use of CAMs and CTs continues to grow, hospital pharmacists will come into contact with an increasing number of patients taking or inquiring about them. Although the majority of pharmacists have no formal training in CAMs, many believe

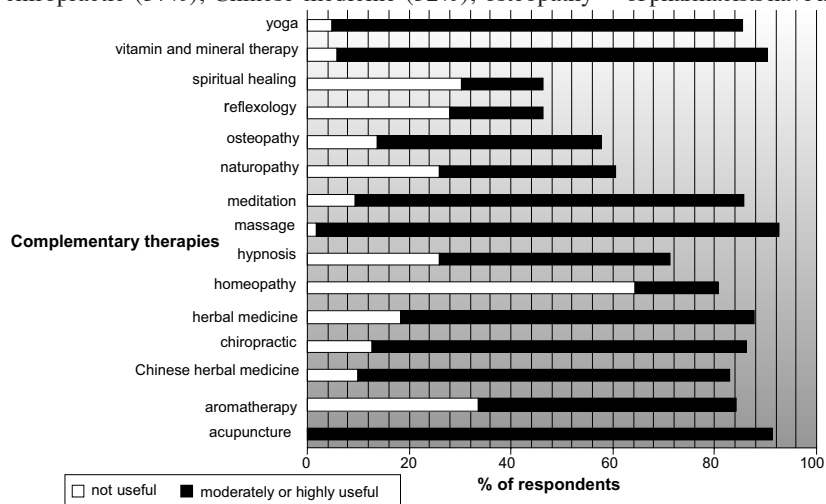


Figure 1. Pharmacists' perceptions of the usefulness of 15 complementary therapies

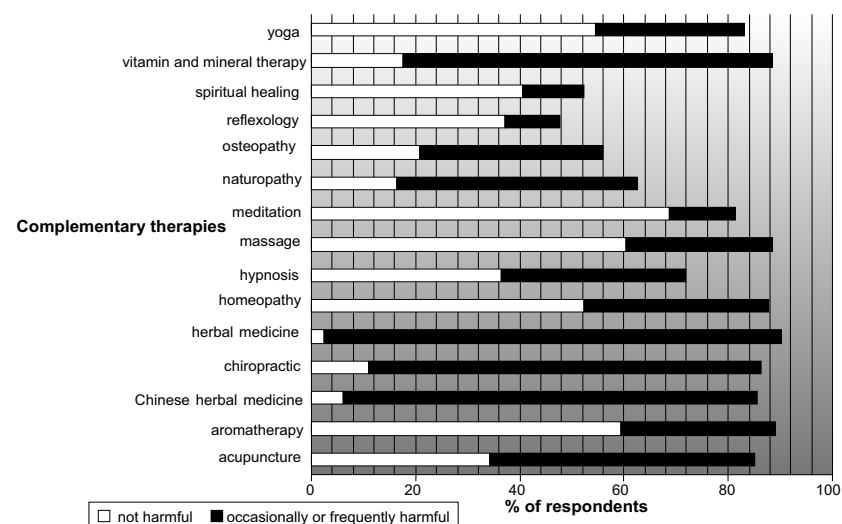


Figure 2. Pharmacists' perceptions of the potential harmfulness of 15 complementary therapies

it is their responsibility to have knowledge and to be able to inform patients about their treatment options.<sup>21,30</sup> Overseas studies have reported that pharmacists have limited knowledge of CAMs, are generally dissatisfied with their level of knowledge and are not comfortable responding to CAM inquiries.<sup>20,21,29,30</sup> These findings are replicated in our study and may account for the substantial interest in further training.

Identifying reliable information sources about CAMs is difficult and the accuracy and currency of the information available varies considerably. Previously, books and journals have been cited as major sources of information for pharmacists however electronic information sources and the Internet were favoured, with Medline as the most popular choice.<sup>29,30</sup> While many would consider Medline a credible and up-to-date resource, its usefulness is limited by the information seeking skills of the user and the lack of full-text research articles. In regard to CAM, these issues are further complicated by the diverse nature of the area, the lack of consensus as to what constitutes CAM and how it is best evaluated.

Although hospital pharmacists have a cautious approach to CAMs and are concerned about safety and cost issues, there is a general acceptance that vitamin/mineral therapy and herbal medicine is moderately or highly useful and over 50% would consider such therapy for personal use. Other CTs such as acupuncture, yoga, meditation and chiropractic were also perceived as useful by the majority. Similar findings have recently been reported for Australian general practitioners indicating a general level of acceptance.<sup>37</sup> Pharmacists also considered some CTs as potentially harmful (particularly ingested medicines) which indicates they are not viewed as harmless placebos.

There are several limitations to this study. Firstly, results cannot be generalised to hospital pharmacists nationally since the sample consisted of pharmacists in metropolitan Melbourne. Secondly, the possibility of incorrect interpretation must be considered although it was assumed that individuals interpreted questions in the intended manner. Thirdly, the AltMedDex database was used to provide answers to the knowledge section because it is widely available in Victorian hospitals through the Clinicians Health Channel. However, another database or resource may have produced a different set of correct answers, thereby influencing the results. Finally, this was a voluntary, self-administered survey, so incomplete data collection and non-response may have biased the results.

Pharmacists have an opportunity to develop a credible professional role as advisors on CAMs to patients and other health professionals.<sup>28</sup> We have identified that patients' use of CAMs presents many challenges for pharmacists and there is an urgent need for further education and training. Access to appropriate resources and well developed information seeking skills are also vital to promote confidence and knowledge in this area. Currently, pharmacists do not routinely ask patients about CAMs or record their use. This suggests that guidelines need to be developed (or greater familiarity with existing guidelines is required) to improve communication about CAMs. In general, pharmacists perceived several CTs as potentially useful suggesting these are no longer seen as fringe therapies but have become accepted therapies.

**Competing interests:** None declared.

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