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**The Pharmacy
Guild of Australia**

Investigating the Integration of Complementary Medicines in Community Pharmacy

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Acronyms

ADR – Adverse Drug Reaction

ADRAC - Adverse Drug Reactions Advisory Committee

CMs – Complementary Medicines (refers to medicinal products only)

CM – Complementary Medicine

GMP – Good Manufacturing Practice

IM – Integrative Medicine

NCCAM – National Centre for Complementary and Alternative Medicine (US)

OTC – Over the Counter

QUM – Quality Use of Medicines

WHM – Western Herbal Medicine

TGA – Therapeutic Goods Administration

Definitions

Complementary medicines (CMs) or complementary medicine products: are defined as commercially prepared herbal medicines, nutritional and food supplements and homeopathic remedies available over-the-counter (OTC) from pharmacies, supermarkets, health food stores, through mail order companies, the internet and from practitioner and medical clinics. They consist wholly or principally of one or more designated active ingredients, each of which has a clearly established identity and a traditional use or any other use prescribed in the regulations.

Complementary medicine therapy: in this report the term is mainly used in reference to therapies which are not considered part of the orthodox medical approach and based on the complementary medicine principles of holism, individualisation and vitalism. Such therapies include: massage therapy, chiropractic, osteopathy, naturopathy and aromatherapy. Some of the practitioners employing these therapies will also use medicinal agents such as CMs.

Herbal medicines: are preparations of plants, and other organisms that are treated as plants in the International Code of Botanical Nomenclature, which are used as therapeutic agents.

Nutritional supplements: refers to products containing essential nutrients (vitamins and/or minerals) or organic compounds essential for health and maintaining body functions (e.g. a multivitamin tablet).

Food supplements: refers to products which increase total dietary intake but are not conventional foods. These products may contain concentrated food extracts, for example soy, colostrum or whey protein, probiotics and sometimes contain additional vitamins, minerals, phytochemicals, amino acids, enzymes or herbs.

Integrative medicine: health care that combines mainstream medical therapies and CM therapies and complementary medicines for which there is some high-quality scientific evidence of safety and effectiveness.

Naturopath: a practitioner who is trained in the principles, philosophy and practice of the complementary medical system of naturopathy. This system emphasises healing through stimulating the body's inherent healing capacity and may include herbal medicine, nutritional medicine, massage and/or homeopathy.

Western herbal medicine (WHM) practitioner (Herbalist): a health practitioner who engages in extemporaneous compounding of herbs for therapeutic purposes for individuals under their care and who has training in herbal medicine principles, philosophy and practice.

AUST L: the unique Australian Register of Therapeutic goods number for a listed therapeutic product.

Background and rationale for the project

Complementary medicines (CMs) are widely available in Australia as over the counter (OTC) products. Australian surveys consistently indicate that use of CMs is widespread amongst a broad cross section of the community. In Australia a number of studies have been completed investigating CM use in both general and populations defined by gender, age or other characteristics such as those with specific diseases.¹⁻¹⁰ For example, a recently completed national study estimated that 69% of Australian adults used at least one non-medically prescribed complementary medicine product and that 44% visited at least one complementary healthcare practitioner.⁵ While much is known about use by the general Australian adult population,¹⁻¹⁰ relatively less is known about the use of CM in the context of pharmacy practice.

Community pharmacy is one of the main suppliers of CMs in Australia and is the primary outlet for approximately 40% of the total money spent on this sector which has been estimated at between \$800 million and \$1.3 billion annually.¹⁰ Despite being a major outlet for CMs there is a paucity of information about the attitudes, information needs and CMs utilisation patterns of community pharmacy customers, and whether there is any disparity between customer needs and the adequacy of community pharmacists to fulfil these needs. In addition to stocking CMs there appears to be a growing trend for some community pharmacies to have CM practitioners (primarily naturopaths or Western herbalists) available in their pharmacies to provide a variety of customer services. Little is known about the prevalence of this development or the role that naturopaths and herbalists take in community pharmacy, the attitudes of customers or pharmacists to this new practice or its impact on Quality Use of Medicines (QUM).

There is also a growing scientific evidence base for some CMs showing that these can improve health, provide symptomatic relief, reduce disease, and reduce health cost; however they can also interact with numerous drugs and cause adverse events.^{11,12} These factors combine to provide pharmacists and other pharmacy staff with both a major opportunity and a burden of responsibility to ensure that the principles of QUM are applied to this area of therapeutics.

The widespread use of CMs within the general community, the potential of these products to provide both health benefits and risks, and the important role of community pharmacists as advocates of appropriate use of medicines makes it imperative to identify how CMs are currently used within the community pharmacy setting. It is also important to identify areas which would benefit from modification or further development to improve pharmacists' delivery of QUM and ultimately patient safety and wellbeing.

Aims

The primary aim of this project was to investigate the integration of CMs into community pharmacy practice, taking into account the behaviours and perceptions of customers, pharmacists and pharmacy assistants, and naturopaths/natural therapists. To achieve the primary aim, each of these groups was investigated separately using dedicated questionnaires with additional focus group discussions for pharmacists and pharmacy assistants.

Secondary aims were:

- To identify customer beliefs and attitudes about CMs and areas where pharmacy practice does not adequately meet customer needs in relation to CMs. To determine customer use and purchasing patterns of CMs, information sources, disclosure about use of CMs, perceived efficacy of CMs used, prevalence of adverse reactions to CMs and customers' behavioural responses.
- To identify pharmacists' and pharmacy assistants' ability to meet the CM information needs of customers and lead QUM practices in regards to CMs within the pharmacy setting. To describe information sources used by pharmacists and pharmacy assistants for CM information, pharmacists confidence in dealing with customer enquires, their knowledge about the evidence-base of commonly used CMs, attitudes to CMs and integration, frequency of employing CM practitioners, previous training and further education needs.
- To identify the prevalence of naturopaths/natural therapists working within the pharmacy setting and their role within this setting. To describe information sources used by naturopaths/natural therapists for CMs, their attitudes to integration of CM practitioners within the pharmacy setting, knowledge about the evidence-base of CMs used by pharmacy customers, referrals to pharmacists and medical practitioners and education.

Methodology

This study consisted of six phases; combining the use of on-line and paper based questionnaires and face-to-face focus groups (Figure 1).

Ethics approval Ethics approval was obtained from the Alfred Human Research Ethics Committee and the Monash Human Research Ethics Committee. Reciprocal ethics approval was obtained from Griffith University for the research conducted at the Gold Coast site and Charles Sturt University for research conducted in Wagga Wagga.

Advisory group An advisory group was established, consisting of two community pharmacists (one from an independent pharmacy and the other working in a larger format, banner group store), a consumer advocate and a representative of the Pharmaceutical Society of Australia. Terms of Reference were developed and approved (Appendix A). The advisory group met three times over the course of the project. Their role was to advise on the relevance of the content included in the questionnaires and interpretation of the finding of the various phases.

Website A web-site was established; see <http://www.alfred.org.au/camstudy/>. Participants were directed to the site for on-line questionnaire completion (Phases 3 and 6) and for additional information, if required.

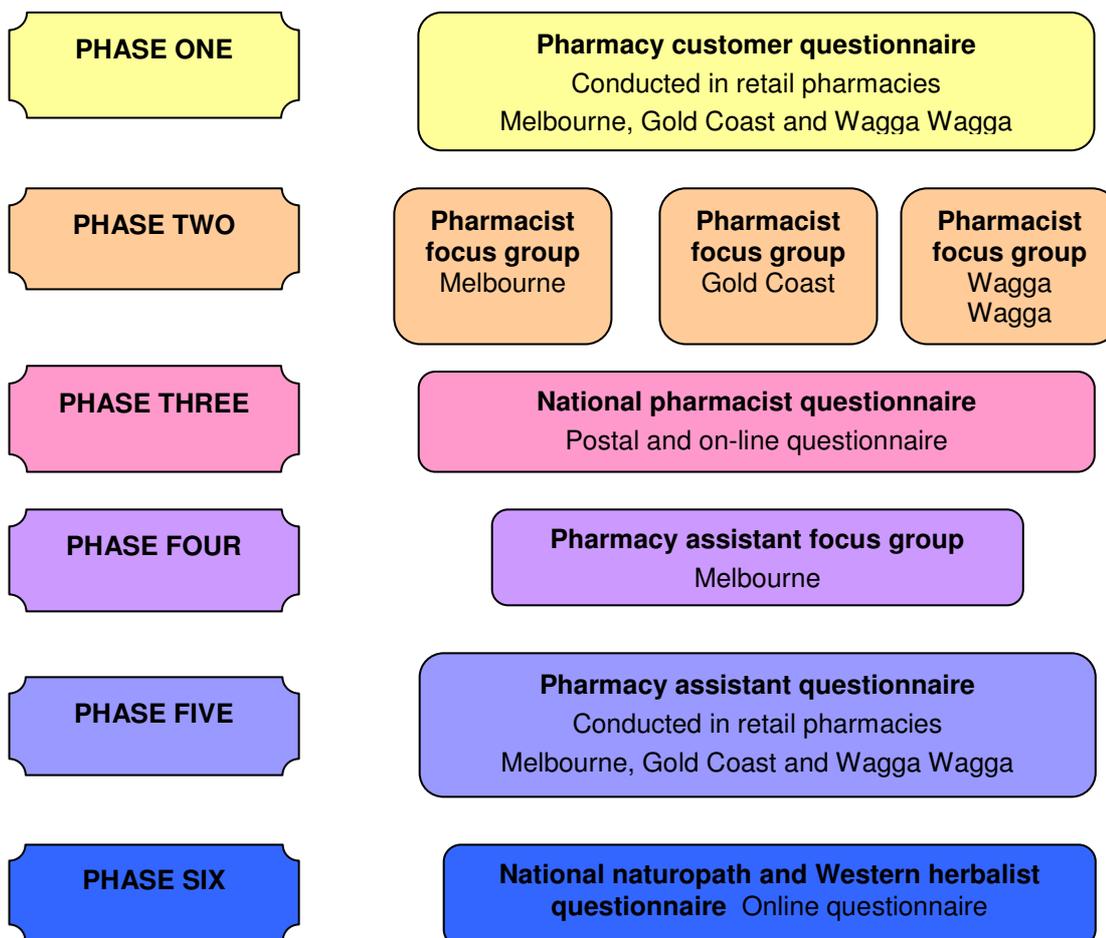


Figure 3. Six phases of the study

1. Phase One: Pharmacy customer questionnaire

a. Questionnaire development

An anonymous, self-administered questionnaire was developed (Appendix B). The questionnaire was adapted from other Australian consumer CM questionnaires,^{5,6,10,13-16} and further informed by the results of a comprehensive literature review, advice from the research group and advisory group. The questionnaire was pre-tested with 40 randomly selected pharmacy customers. It was found to be clearly understood and effective at collecting the required information. It took less than 20 minutes to complete.

b. Pharmacy site selection and data collection

Three project sites were selected to provide information from metropolitan and regional areas of Australia. Melbourne (Vic) and the Gold Coast (Qld) were the metropolitan sites; Wagga Wagga (NSW) was the regional site.

Pharmacies in Melbourne and the Gold Coast were selected based on proportional sampling of location (i.e. strip shopping centre 37%, shopping mall 33% or adjacent to medical clinic 30%) and ownership (independent 60%, banner group 37%, or discount warehouse 3%). In Wagga Wagga (regional site) all pharmacies were approached. Written consent was obtained from each participating pharmacy (Appendix C). A representative population sample of 1000 customers was sought to provide sufficient data to enable meaningful interpretation.

A trained Research Assistant at each site attended the consenting pharmacies and approached pharmacy customers for recruitment into the study. Customers were invited to participate and provided with a Participant Information Sheet and a hard copy of the questionnaire. The questionnaire was either completed on-site or returned in a reply-paid envelope. Consent was implied when the questionnaire was returned.

2. Phase Two: Pharmacist focus groups

Based on the published literature and results from Phase 1 of the study, a discussion guide was developed (Appendix D).

A focus group was held at each project site. Participants were recruited from different types of community pharmacies through convenience sampling and using snowballing technique. A semi-structured discussion was facilitated by one of the researchers, the discussions recorded and later transcribed prior to coding into themes. This data was used to inform the design of the Phase 3 questionnaire.

3. Phase Three: National pharmacist questionnaire

a. Survey tool development

An anonymous, self-administered questionnaire was developed (Appendix E). The questionnaire was adapted from three previously published studies^{15,17,18} and by the National Prescribing Service report.¹⁹

Additional questions were included to explore themes arising from Phase 1 of the study, relating to customers' perceptions and attitudes.

Aspects of CM knowledge were also investigated. One part of the knowledge section assessed respondents' knowledge of the common OTC CM products that are supported by clinical evidence. Participants were asked whether the listed CMs had a clinically proven use for a given list of indications and were given three possible responses: yes, no, unsure. The questions in this section were also included in the Pharmacy Assistant (Phase 5) and Naturopaths/Western Herbalists (Phase 6) questionnaires. The second part of the knowledge section assessed respondents' knowledge of common CM-drug interactions. Participants were asked whether an interaction existed between the listed CMs and a list of commonly used medications. They were given three possible responses: yes, no, unsure. The questions in this section were included in the Naturopaths/Western Herbalists (Phase 6) questionnaire. Correct answers to the two knowledge sections were defined from material contained within two CM texts: Herbs and natural supplements – an evidence based guide (2nd edition)²⁰ and Herb, nutrient and drug interactions.²¹ The 41 item questionnaire was pre-tested by members of the pharmacist focus groups (Phase 2) and a convenience sample of pharmacists at the Alfred Hospital, Melbourne.

b. Sampling methodology and data collection

The Pharmacy Board of each Australian State and Territory was approached to provide a list of registered pharmacists. These were directed to an independent mailing house which applied proportional random sampling techniques, based on the proportion of pharmacists registered in each state. Based on the

expectation that 95% of pharmacists receive CM enquires from customers, with a 95% CI \pm 3% variation and 34% response rate, a distribution sample of 4,376 was utilised.

Selected pharmacists were mailed an introductory letter directing them to the on line questionnaire, as well as a hard copy of the questionnaire and a reply-paid envelope. This gave participants the option of completing the questionnaire either on paper or directly on line. A reminder letter was mailed to pharmacists two weeks later. Consent was implied by completion of the questionnaire. Data were manually entered into SurveyMonkey™, either directly by the respondent or from paper copies returned by mail.

4. Phase Four – Pharmacy assistant focus group

A discussion guide was developed, based on the published literature, results from Phase 1 of the study and communication with the National Prescribing Service¹⁹ (Appendix D). A focus group was held in Melbourne with participants recruited from different types of community pharmacies through convenience sampling and using snowballing technique. A semi-structured discussion was facilitated by one of the researchers, the discussion recorded and then transcribed. Information was coded into themes and used to inform the design of the pharmacy assistant questionnaire (Phase 5).

5. Phase Five – Pharmacy assistant questionnaire

An anonymous, self-administered questionnaire was developed (Appendix F), based on the questionnaires used in Phase 1 and Phase 3. The questionnaire was tested by a focus group of pharmacy assistants with a known interest in CM.

A convenience sample of pharmacy assistants from the 52 pharmacies that had previously participated in the Phase 1 customer survey was invited to complete the questionnaire. Written consent was obtained from all participants (Appendix G).

6. Phase Six – National naturopath and Western herbalist questionnaire

An anonymous, self-administered questionnaire was developed, based on the questionnaire used in Phase 4. The questionnaire was pre-tested by a convenience sample of naturopaths/Western herbalists from the Board of the National Herbalist Association of Australia (NHAA). Based on this feedback, the questionnaire was modified to form the final version (Appendix H).

Recruitment was through email invitation of some of the relevant professional associations and networks of account holders of major CM product wholesalers and distributors. The email contained an introductory letter explaining the project and directions to the online questionnaire. Consent was assumed upon completion of the survey. The survey took approximately 15 minutes to complete and participants entered data directly and anonymously into the on line questionnaire. A sample size of 400 was required to enable statistically valid data interpretation.

Data entry and statistics All data from the customer, pharmacist, pharmacy assistant and naturopath/herbalist questionnaires was entered into SurveyMonkey™, an on line survey tool. Descriptive and inferential statistics were derived using SAS version 9.1 (SAS Institute Inc., Cary, NC, USA). Differences in proportions between groups were compared using chi-square tests for equal proportions or Fishers Exact tests where numbers were small and reported as percentages (n). Continuously normally distributed variables were compared using Student's t-test and reported as means (standard errors), while non-normally distributed variables were compared using Wilcoxon Rank Sum test and reported as medians (interquartile range). To reduce the chance of type I errors, a reduced p-value of 0.01 was considered to be statistically significant. Correct responses from the knowledge sections were given a score of 1; incorrect responses were given a score of 0. Scores from all answers were then aggregated to give overall scores for knowledge. These scores were then compared between groups in accordance with their underlying distributions, as described above.

Results

The study was conducted in six phases which investigated four different populations: pharmacy customers, pharmacists, pharmacy assistants and naturopaths/natural therapists. A summary of key results is presented separately for each phase in this report. Full study results are available in the full academic report.

Customer survey

Response Rate and Demographics

A total of 1,121 pharmacy customers completed questionnaires (response rate 62%), of which 65% (n = 728) were from metropolitan Melbourne, 27% (n = 307) from the Gold Coast region and 8% (n = 86) from Wagga Wagga. More women participated in the survey than men (74% vs. 25%) and participants ranged in age from 18 years to over 70 with a broad range in between. Further demographic and baseline data is presented in Tables 7 and 8 in Appendix I. Data was collected in 60 retail pharmacies (Figure 2).

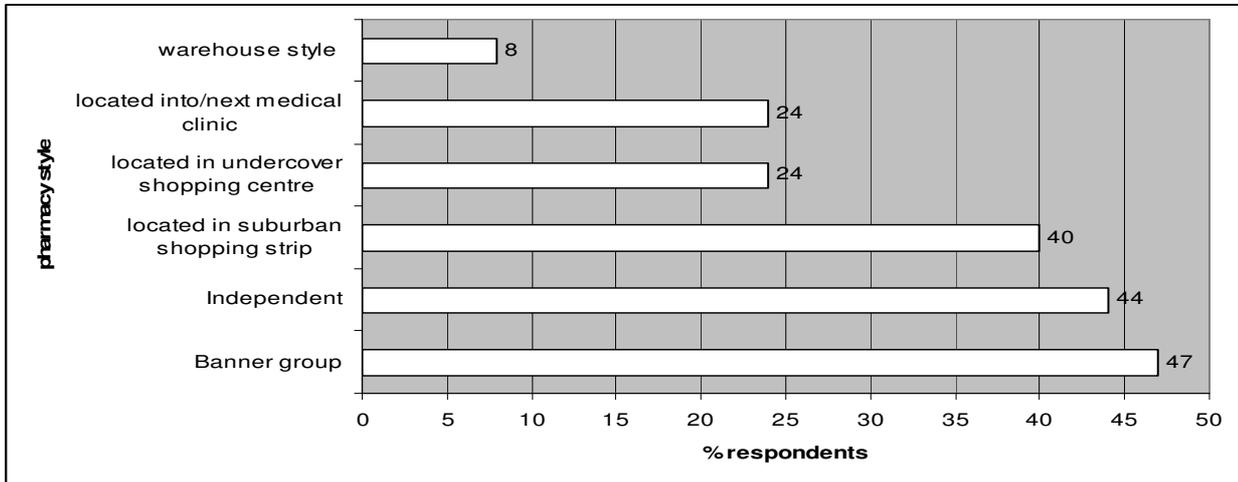


Figure 4. Description of pharmacies where data collection took place

Consultations with medical doctors and CM practitioners

There was no significant difference between the proportion of men and women that had consulted a medical doctor in the previous 12 months (93% for both). Of the total sample, 39% reported that they had visited a CM practitioner in the previous 12 months. Of these, 38% had seen a massage therapist, 33% a naturopath/natural medicine practitioner and 31% a chiropractor (See Figure 11 in Appendix I for more information). More women reported having consulted a CM practitioner than men during the previous 12 months (43% vs. 27%; $p < 0.0001$). A greater proportion of people younger than 50 years consulted CM practitioners compared to people over 50 years old (48% vs. 30%; $p < 0.0001$). Comparisons between customers living in metropolitan areas and rural areas revealed no significant differences in regards to the proportion of people consulting a CM practitioner (33% vs. 36%).

Patterns of use of CMs

CMs had been used by 72% of pharmacy customers in the previous 12 months. The ten most popular CMs taken by pharmacy customers are listed in Table 1.

Table 1. CMs used by pharmacy customers in the previous 12 months

List of Top 10 CMs taken	N (%)*
Multivitamins	392 (49)
Fish oil supplements	379 (47)
Vitamin C	244 (31)
Glucosamine	234 (29)
Vitamin B complex	197 (25)
Probiotics	134 (17)
Echinacea	94 (12)
Coenzyme Q10	57 (7)
Ginkgo biloba	41 (5)
St Johns wort	37 (5)
Total customers responding	801

*% of total respondents taking CMs

Significantly more women reported having taken a CM product than men (76% vs. 58%; $p < 0.0001$). Significantly more women were reported using multivitamins, vitamin C supplements, probiotics and Echinacea than men. Age comparisons revealed that significantly more people over 50 years were taking glucosamine (33% vs. 10%; $p < 0.0001$) or fish oil supplements (41% vs. 28%; $p < 0.0001$) compared to people under 50 years of age. There were no significant differences in frequency of CMs use between customers living in metropolitan Melbourne compared to Wagga Wagga and surrounds and no significant association between use and income or marital status.

Customers aged over 50 years were more likely to be taking CMs to treat a specific disease than younger people (34% vs. 27%; $p = 0.009$). Most customers taking CMs thought they were very effective or effective enough (72%) with very few reporting the CM product as not effective (0.5%) (See Figure 12; Appendix I).

Sources of recommendation of CMs

Table 2 lists the individuals recommending CMs to pharmacy customers. Customers aged over 50 years were more likely to report their CMs were recommended by a medical doctor than younger people (27% vs. 20%; $p = 0.007$). More women reported being recommended CMs by a naturopath or herbalist than men (17% vs. 7%; $p < 0.0001$). No significant differences were found for customers in regional versus metropolitan areas.

Table 2. Recommendation of CMs to pharmacy customers

Recommendation by:	Number (%)*
Myself	335 (42)
Medical doctor	255 (32)
Family/friends	162 (20)
Naturopath/herbalist	160 (20)
Pharmacy assistant	100 (13)
Health food store staff	50 (7)
Pharmacist	81 (10)
Other	48 (6)
Total responses	801

*% of total respondents answering question

Sources of information about CMs

Few customers using CMs (18%) referred to pharmacists as a source of information (see Figure 3). Customers aged over 50 years were more likely to receive information about CMs from their medical doctor than those younger than 50 years (24% vs. 17%; $p = 0.003$). Free text comments were received by 105 customers overall indicating that the internet was another important source of information.

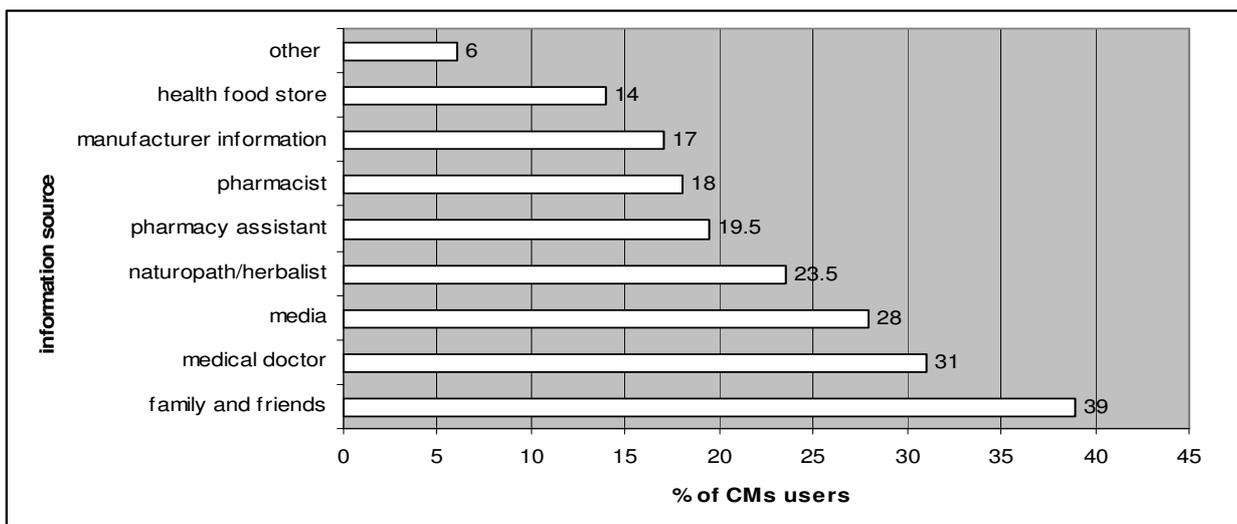


Figure 5. Sources of CM information used by pharmacy customers

Customers' purchasing behaviours and expenditure

CMs users were asked for the location where they generally purchased their products with 60% stating it was pharmacy. For those purchasing CMs from pharmacy, 37% explained it was because of convenience, 21% the product desired was stocked, 18% stated they get better advice from the pharmacy about the product than elsewhere, 13% it is cheaper than elsewhere, and 7% because advice is available from a natural therapist in the pharmacy. Customers were allowed multiple responses.

For those people stating that pharmacy was not their primary place of purchase for CMs, the reasons given were: a perception that pharmacy was too expensive (23%), the product desired was not stocked (17%), 10% stated they get better advice about these products elsewhere, 9% stated it is not convenient and 7% stated 'I don't need pharmacist advice about these products'.

The median reported expenditure by all CM users was 'up to \$20' per month (from options 'Up to \$20', '\$21-50', '\$51-100', and 'over \$100').

AUST L on CM products lacks recognition and meaning for customers

The majority (88%) of customers taking CMs had never noticed the term 'AUST L' on a CM product label. Of those that had, 33% thought it meant the product was tested by a government agency for safety, 26% thought the product had been tested by a government agency for quality, and 24% thought it denoted an Australian made product. Fifteen percent thought it meant the product was tested by a government agency for effectiveness and 13% stated they did not know what it meant.

Incidence of adverse reactions to CMs

People that had taken CMs within the last 12 months were asked if they had ever experienced an adverse reaction to a CM product; 7% (n=55) reported they had. The only health parameter with a significant association to reporting an adverse reaction was poorer health ($p=0.0002$) compared with CMs users not reporting an adverse reaction. There was no significant association between experiencing an adverse reaction and age, gender, education, income, use of warfarin, digoxin or the oral contraceptive pill. People experiencing an adverse reaction were asked to describe its severity. Results are presented in Figure 4.

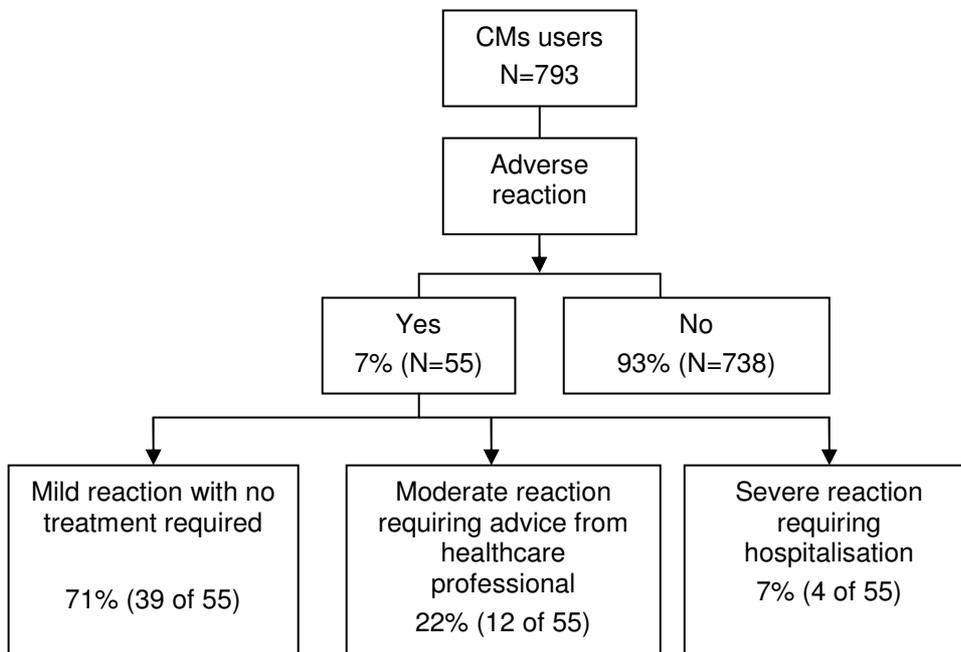


Figure 6. Severity of ADR as reported by customers

The majority (78%) of people reporting to have had an adverse reaction decided to stop using the product, 13% actively sought advice from a healthcare professional, 13% changed products and 7% reduced their dose. Twenty two percent of respondents told a pharmacist about the reaction, 24% told family and/or friends and 36% told their doctor.

Attitudes of CMs users

The attitudinal statements where over 80% of customers strongly agreed or agreed are listed below:

- 'It is important for pharmacists to be aware of the CMs people use'
- 'I have confidence in prescription medicine prescribed by my doctor'
- 'It is important for pharmacists to be knowledgeable about CMs'

Full results of responses to attitudinal statements are presented in Table 9 in Appendix I.

Attitudes of all surveyed customers to CMs and integration

The majority of customers (87%; n=950) believe that pharmacists should recommend CMs if they are effective. In particular, 92% thought pharmacists should provide safety information about CMs and 90% thought they should routinely check whether CMs taken by customers interact with prescription medicines. Additionally, 78% of customers thought pharmacists should record CM products taken by patients in their medication profile. In regards to information provided, only 55% of customers thought their regular pharmacy provided enough information about CMs. Despite this, only 33% thought pharmacy services should improve the way they manage CMs.

Approximately half (58%) of the survey respondents thought pharmacies which stock CM products should also employ a CM practitioner.

In regards to CMs specifically, 87% of customers thought effective CMs should have a 'tick of approval' from a recognised government body with CM expertise and 82% wanted more detailed product information similar to script medicine for all CMs.

Pharmacist focus groups

Three pharmacist focus groups were held (n=21) to provide background data to inform questionnaire development. A summary of the key findings are presented here. More detailed findings are presented in the full academic report.

The discussions yielded the following themes:

- **Recommending CMs:** The majority of participating pharmacists reported that they recommended CMs to customers, although they were not necessarily confident or comfortable recommending them. Pharmacists commented that they often pass on the task of recommending CMs to shop assistants. They also commented that often customers come into the pharmacy with preconceived ideas about the CM product they want so pharmacists don't feel the need to recommend them in this instance.
- **Integration of CM into pharmacy practice:** No consensus was reached on the need for CM integration into patient care, as well as the customers' expectation of the pharmacist's ability/responsibility to counsel on CMs. Pharmacists thought that the main barriers to further integration of CM into practice were the lack of evidence, time, and money.
- **Counselling customers:** Participants agreed that they have an ethical obligation to know about CMs but pharmacists also need to recognise the limitations of their CM expertise.
- **Asking customers about their use of CMs:** Some pharmacists felt conflicted about asking customers about their CM use because they are not convinced CM products work, they are concerned about interactions and/or how to get information about interactions, and/or they don't know what to do with the information obtained.
- **Recording customers' use of CMs:** this was heavily debated with arguments for and against presented. Arguments for recording focussed on the promotion of patient safety and service and arguments against focussed on time pressures and legal implications.
- **Attitudes to naturopaths working in the pharmacy setting:** This was mostly seen as a positive development, particularly by pharmacists who had experience of working with naturopaths in this setting. The main advantages given were because naturopaths support and reassure customers and pharmacy staff, free up other pharmacy staff, provide integrative care, and increase product sales. However, concerns were also raised such as the endorsement of dubious products and the unknown professionalism of naturopaths and legal implications for pharmacists.
- **Information, knowledge and training:** Pharmacists were uncertain about where to find information on CMs, or about the quality of that information. Many participants suggested they needed more CM knowledge and training. In general mixed feelings existed about relying on pharmacy assistants with specialised CM training to provide information.
- **The way forward:** A variety of suggestions were made including increasing the number of CM articles in professional pharmacy journals, making changes to undergraduate pharmacy courses to include more education about CM, offering additional training in CMs for pharmacists and pharmacy assistants, improving interaction with CM practitioners, identifying and having access to reliable information sources, and promoting research on CMs.

National Pharmacist survey

A summary of key results is presented. Full study results are available in the full academic report.

Response Rate and Demographics

A total of 4,376 pharmacist surveys were distributed and 736 surveys returned, giving a response rate of 17%. Of the 514 pharmacists working in retail, 54% worked in an independently owned, non-banner affiliated pharmacy and 46% in a banner group affiliated pharmacy. Respondents had an average age of 45 years and the majority (94%) had completed their undergraduate degree in Australia with most respondents graduating from the University of Sydney (n=191) or the Victorian College of Pharmacy in Melbourne (n=151). Table 3 provides further demographic information.

Table 3. Demographics of pharmacist respondents

	N=736 (%)*
Women	443 (62)
Age	22-86 years
Years having worked as a pharmacist	
< 1 year	15 (2)
1-5 years	125 (17)
6-10 years	73 (10)
11-20 years	119 (17)
> 20 years	384 (54)
Main site of practice	
Community/Retail	516 (76)
Hospital	130 (19)
Consultant/ Accredited Pharmacist	36 (5)
Other (e.g. Industry, Academia, Public Service, Army, Retired)	54 (7)

*% of total respondents

Personal use of CMs

Personal use of CMs by pharmacists was common with 76% reporting use in the last 12 months. Comparison between hospital and community pharmacists showed significantly fewer hospital pharmacists used CMs compared with community pharmacists (58% vs. 80%; $p < 0.0001$).

Past training in CMs

All pharmacists were asked about their previous level of training regarding CMs (Figure 5.)

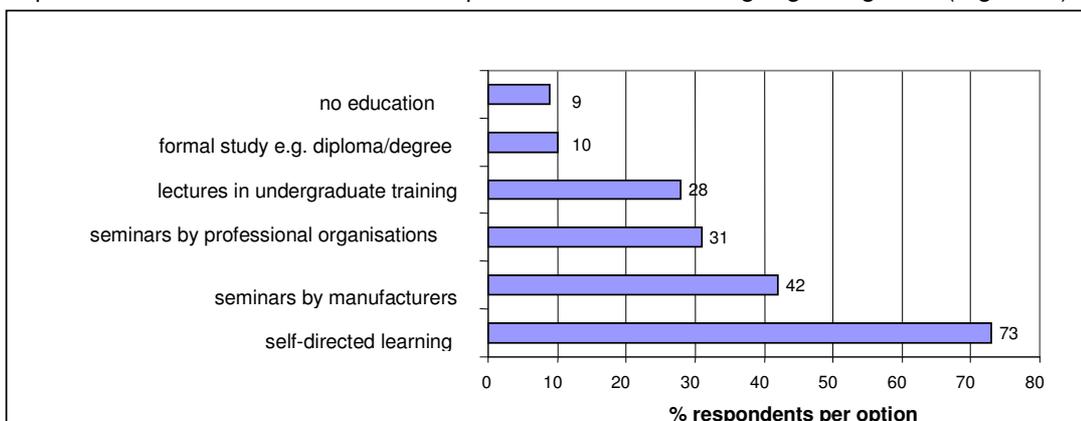


Figure 7. Pharmacists' previous training about CMs

Fewer hospital pharmacists than community pharmacists had undertaken CM product training from a seminar conducted by a product manufacturer (21% vs. 48%; $p < 0.0001$) or the PSA (17% vs. 32%;

p=0.0008) and significantly more hospital pharmacists reported no CM product knowledge (19% vs. 6%; p<0.0001) compared with community pharmacists.

Stocking CM products

The majority of the respondents' workplaces stocked CMs (large range: 46%, limited range 40%). In a small number of instances this included practitioner only CMs (6%) and liquid herbal medicines (4%), which are specialist products usually found in naturopath or herbal medicine clinics. Compared to pharmacies without a CM practitioner significantly more pharmacies that employed a CM practitioner stocked a large variety of CMs (41% vs. 68%; p<0.0001) and practitioner only CMs (4% vs. 15%; p=0.0001).

Utilising naturopaths/natural therapists in the pharmacy setting

Approximately half of the community pharmacist sample (n=262) stated they would consider employing a naturopath/natural therapist. Pharmacists were also asked what factors they consider important if contemplating employing a naturopath. Most (84%; n=427) of the total community pharmacist sample stated that having the appropriate tertiary qualifications was important (Figure 6.).

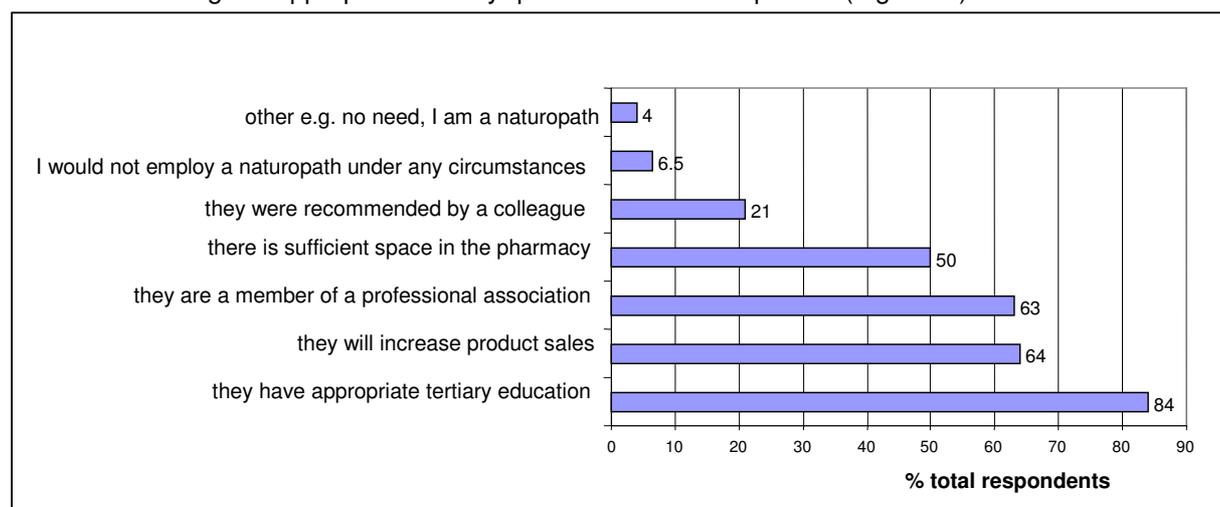


Figure 8. Important factors in utilising natural therapists in the pharmacy setting

Overall, 18% (n=96) of the 525 community pharmacists participating in the survey reported that their pharmacy currently employs a store naturopath/natural therapist. Of these pharmacists, 64% (n=63) described the service provided by naturopaths/ natural therapists as valuable, whereas 3% (n=3) reported it was not valuable. Naturopaths that had worked in pharmacies and who took part in the naturopath survey had similar perceptions of the value of their service in the pharmacy setting. The majority of pharmacists (74%) working in pharmacies which employed a naturopath/natural therapist stated they referred customers to the naturopath and personally referred to them for general information about CMs and specific questions about weight loss products, product brands and herb-drug interactions.

When asked what role the naturopath/natural therapist played in pharmacies where they were employed, 87% of pharmacists reported that naturopaths were utilised to provide advice to customers about CMs, 73% stated they conducted consultations for customers in a private room and 61% stated they were used as a source of CM information. Few pharmacists (5%) reported that naturopaths were involved in other tasks such as stock control and sales.

The survey asked all respondents whether they would describe their pharmacy practice as providing integrative care which was defined in the survey as 'recommending CMs together with conventional medicines as part of standard practice'. About half (47%) considered their pharmacy practice could be described as providing integrative care and a similar proportion (43%) thought that they partly provided integrative care. No significant difference was found between pharmacists working in pharmacies with or without in-pharmacy naturopaths/natural therapists.

Recommending CMs in the pharmacy

Thirty-nine percent of pharmacists reported that mainly pharmacy assistants recommended CMs in-store with a further 34% stating they personally recommended CMs. This pattern of recommendation was very different in stores employing CM practitioners. Under these conditions significantly fewer pharmacy

assistants (20% vs. 43%; $p < 0.0001$) and pharmacists (14% vs. 38%; $p < 0.0001$) recommended CMs to customers compared to stores without CM practitioners.

Several barriers were identified which prevented pharmacists from recommending CMs as part of routine practice. Half the respondents (52%) reported that insufficient knowledge was a barrier, 46% stated lack of information sources and 38% stated limited opportunity to discuss CMs were barriers.

Asking customers about CMs

Only 24% of participants 'always' ask customers about use of CMs, 29% often, 30% sometimes, 13% rarely and 3% never. Significantly more hospital than community pharmacists reported always asking customers presenting with prescriptions if they take CMs (33% vs. 18%; $p = 0.0002$). Reasons for not asking all customers with prescriptions about CMs are presented in Figure 7.

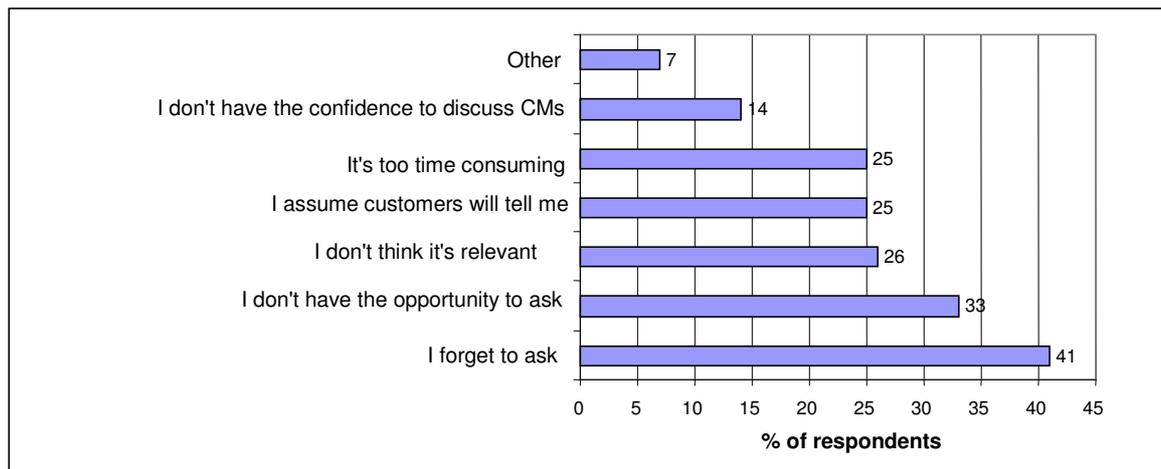


Figure 9. Reasons for not asking all customers with prescriptions about CM products

Customers reporting adverse reactions to CMs

In the last 12 months 23% ($n = 160$) of pharmacists had been notified of an adverse reaction to a CM product by a customer. Significantly fewer hospital pharmacists were told of an adverse reaction to a CM product by a customer than community pharmacists (14% vs. 25%; $p = 0.009$).

Of those pharmacists reporting that a customer had told them of an adverse reaction, 73% ($n = 109$) stated they had noted the information in the patient's profile/notes, 37% ($n = 56$) referred the customer to a medical practitioner, 18% ($n = 27$) notified ADRAC, 16% ($n = 24$) notified the manufacturer, 2% ($n = 3$) referred them to a hospital and 14% ($n = 21$) did nothing. Hospital and community pharmacists' responses did not differ significantly except that significantly more community pharmacists notified the product manufacturer of an adverse reaction to their product compared with hospital pharmacists (5% vs. 0%; $p = 0.007$).

Attitudes of pharmacists about CMs and integration within pharmacy practice

Pharmacists' responses to 12 attitudinal statements are presented in Table 4. A greater number of pharmacists who work in pharmacies employing a naturopath strongly agreed with the statement that 'community pharmacies would benefit by employing a natural therapist to provide customer information' than pharmacists not working in pharmacies where a naturopath/natural therapist was employed (40% vs. 12%; $p < 0.0001$).

Hospital and community pharmacists had different opinions about several facets of CM integration. More community pharmacists strongly agreed with following statements compared with hospital pharmacists:

- 'Pharmacists should play a greater role in recommending CMs' 23% vs. 13% ($p = 0.019$)
- 'Community pharmacies would benefit by employing a natural therapist to provide customer information' 17% vs. 9% ($p = 0.032$)
- 'I am confident about the quality of Australian made CMs' 15% vs. 5% ($p = 0.003$)

In contrast, more hospital than community pharmacists strongly agreed with the statement 'pharmacists should record customers' use of CMs in their medication profile/patient notes' 43% vs. 18%; ($p < 0.0001$). Full results are in Table 4.

Table 4. Attitudes of pharmacists about CMs and integration

	Responses				
	SA N (%)*	A N (%)	U N (%)	D N (%)	SD N (%)
CM products are an important part of the financial business of retail pharmacy	168 (24)	366 (53)	118 (17)	37 (5)	7 (1)
Customers are now expecting more information about CM products from their pharmacist than 5 years ago	260 (37)	361 (52)	61 (9)	18 (3)	0 (0)
Pharmacists have a professional responsibility to counsel customers about CM products	264 (38)	363 (52)	51 (7)	19 (3)	4 (1)
Pharmacists should play a greater role in providing customers with safety and drug interaction information about CM products	306 (44)	337 (48)	45 (6)	10 (1)	5 (1)
Pharmacists should play a greater role in recommending CM products	146 (21)	302 (43)	176 (25)	63 (9)	14 (2)
I am confident about the quality of Australian made CM products	95 (14)	324 (46)	212 (31)	64 (9)	6 (1)
The advertising of CM products in Australia is sufficiently well regulated	24 (3)	144 (20)	293 (42)	168 (24)	72 (10)
CM products should be accompanied by more detailed product information	278 (40)	366 (52)	35 (5)	19 (3)	2 (0)
Clinically proven CM products should have a 'tick of approval' from a recognized government body with expertise in complementary medicine	359 (51)	254 (36)	49 (7)	29 (4)	8 (1)
Community pharmacies would benefit by employing a natural therapist to provide customer information	106 (15)	261 (37)	193 (28)	108 (15)	34 (5)
Pharmacists should record customers use of CMs in their medication profile/ patient notes	176 (26)	374 (53)	104 (15)	38 (5)	8 (1)
Naturopaths and herbalists should be formally registered to safeguard the public	360 (51)	289 (41)	34 (5)	13 (2)	7 (1)

SA= strongly agree; A=agree; U=unsure; D=disagree; SD=strongly disagree

*% of total respondents

Sources of information about CMs and resources currently being used

Professional reference texts such as MIMs, APP and the APF were used as sources of CM information by 56% of pharmacists, followed by CM textbooks (48%) and the internet (43%). Pharmacists who worked in a pharmacy that employed a naturopath/natural therapist used different CM resources to other pharmacists. Significantly more of these pharmacists reported using a CM specific textbook (61% vs. 44%; $p=0.002$) or a CM practitioner as an information source (44% vs. 6%; $p<0.0001$). In addition, significantly fewer of these pharmacists used standard reference texts such as MIMs, APF and APP (43% vs. 60%; $p=0.002$), pharmacy specific journals (26% vs. 41%; $p=0.009$) or the internet in general (e.g. Google) (28% vs. 44%; $p=0.004$) for CM information.

Differences were also found between hospital and community pharmacists use of resources. More hospital pharmacists reported using databases such as PubMed/MEDLINE (36% vs. 14%; $p<0.0001$) and specific websites (22% vs. 11%; $p=0.0005$) as CM information sources compared to their community based counterparts and significantly fewer hospital pharmacists used reference texts such as MIMs, APF, APP (42% vs. 59%; $p=0.0006$) and pharmacy specific journals (e.g. Australian Journal of Pharmacy, Australian Pharmacist) (25% vs. 39%; $p=0.003$).

Additionally, significantly fewer hospital pharmacists used CM journals (6% vs. 24%; $p<0.0001$) and manufacturer literature, seminars and/or representatives (13% vs. 34%; $p<0.0001$) as a source of CM information compared to community pharmacists. Other information sources used by pharmacists are presented in Table 10 in Appendix I.

Factors considered important for a CM information resource

When asked what factors they considered most important when assessing CM information resources, the five most popular responses were: 70% reported that it should contain scientific information, 38% available online or on the desktop, 35% endorsed by the PSA or another educational organisation, 34% that it contains a wide range of CMs (those with and without evidence) and 33% that it contains both traditional and scientific information.

The sources of information gaining the most responses as being essential or important for CMs were: randomised controlled trials (96%), population studies (81%), published case reports (80%), traditional and well documented historical use (78%), customer feedback (67%), personal experience (62%), animal studies (48%) and colleague recommendation (43%).

Community and hospital pharmacists differed in the sources of information they considered important regarding CMs. Significantly more community pharmacists reported that information gained from colleague recommendation, personal experience and customer feedback was important compared to hospital pharmacists (43% vs. 22%; $p<0.0001$: 59% vs. 39%; $p<0.0001$: 64% vs. 43%; $p<0.0001$). More hospital pharmacists reported that it was important that CM information was not produced by manufacturing companies compared with community pharmacists (32% vs. 17%; $p=0.0003$).

Knowledge of evidence based CMs

Pharmacists were asked to provide responses to questions about the proven clinical benefits of a select number of CMs for a select number of conditions and about interactions between a specified list of CMs and medications. A maximum score of 39 was possible. Responses to this section were received from 91% of pharmacists. The mean correct score obtained by pharmacists was 20.5 (53%).

Pharmacists that reported having undertaken self-directed learning achieved a significantly higher mean score of 21 compared with 15 for pharmacists that had not ($p<0.0001$). Pharmacists that reported having attended undergraduate lectures pertaining to CM also attained a significantly higher mean score of 22 compared with 18 ($p<0.0001$) compared with others that did not receive such education. Additionally, pharmacists that had attended manufacturer seminars achieved significantly higher knowledge scores compared to others (21 vs. 17; $p<0.0001$).

Pharmacists who had graduated within the last 1-5 years achieved a mean score 2 points higher than those who graduated >5 years ago ($p=0.006$). Additionally, pharmacists that graduated more than 20 years earlier had a mean score 2 points lower than the mean for the entire pharmacist group ($p=0.003$).

Future training

Most pharmacists (76%) thought that it was very important for undergraduate pharmacy students to learn about evidence-based CMs and 85% were themselves interested in additional CM training. As a delivery method, 53% of pharmacists preferred short online courses, face-to-face seminars (45%) and self-directed learning through journals (43%). Only 8% of respondents were interested in undertaking a post-graduate course. More overseas trained pharmacists were interested in post-graduate training compared with Australian graduates (16% vs. 5%; $p<0.0001$).

The ideal amount of time for CM training was seen by the majority of respondents (40%) to be 1-2 hours per month and preferential education providers were the Pharmaceutical Society/Pharmacy Guild (60%) followed by the NPS (46%), a CM training college (24%) or an Australian university (22%). Hospital pharmacists preferred the training to be offered by the NPS, a significant difference to community pharmacists, who preferred the PSA (48% vs. 35%; $p=0.005$).

Pharmacy assistant focus group

A single focus group with pharmacy assistants ($n=8$) was held in Melbourne to provide background data to inform questionnaire development. The key themes arising from this discussion were: confidence about CMs was related to level of CM training; CM training was primarily via manufacturers' seminars, product information and hotlines; there was increased acceptance of CMs by the general public and increased customer awareness and questioning about CMs.

Pharmacy assistant survey

Response Rate and Demographics

Responses were received from 112 pharmacy assistants; 68 from the Melbourne, 38 from the Gold Coast, 5 from Wagga Wagga (one respondent did not report postcode). Response rates were 80%, 100% and 27% respectively. All respondents were women (mean age 36 years) with most (37%) having worked in the position for 1-5 years.

Personal use of, and education in CMs

Overall 97% of respondents had used a complementary medicine product within the past 12 months with most (60%) indicating frequent use of CMs. The majority (86%) had also received some form of training in CM, most frequently by attendance at product manufacturers' seminars (65%). Approximately half the

respondents (51%) indicated receiving two or more different forms of training in CMs. Those with prior CM training were more likely to receive training via attendance at product manufacturers seminars (74 % vs. 0%; $p<0.0001$) and to use product manufacturer literature (49% vs. 8%; $p=0.009$) and CM textbooks (40% vs. 0%; $p=0.004$) as information sources. These individuals also indicated that they had frequently recommended a CM product in the last 12 months (63% vs. 8%; $p=0.0002$) and that they rely on information from their own knowledge when assisting customers (78% vs. 31%; $p=0.0003$) compared with assistants with no previous training.

Almost all (92%) respondents were interested in additional CM training and would prefer face-to-face seminars (65%) with other delivery methods endorsed by a third of respondents or fewer. The group most favoured to offer this training were CM manufacturers (55%) followed by the Pharmaceutical Society/Pharmacy Guild (38%), a CM training college (26%) or Australian universities (12%). Interestingly those with some prior CM training were less likely to prefer that training in CM was provided by Australian universities (5% vs. 46%, $p<0.0001$).

Interactions with customers regarding CMs

All pharmacies where respondents worked stocked CMs with most holding a wide range of products (71%). Respondents described themselves as generally (11%), very (22%) or completely confident (54%) in discussing CMs with customers and those with prior training in CM were more confident than those without training (Figure 8). Eighty-four percent of pharmacy assistants indicated that they had at least 5-9 enquires/week about CMs during the past month; only one person indicated not recalling any CM enquires during this period. There was no statistically significant relationship between pharmacy assistants' confidence and the number of enquires received each week.

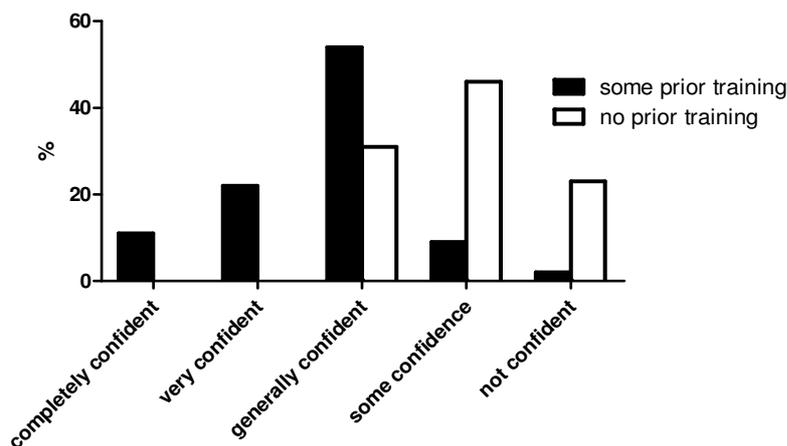


Figure 10. Confidence of pharmacy assistants to discuss CM with customers

Communication with pharmacists about customer CM enquiries

In terms of types of customer enquiries, pharmacy assistants were most frequently asked to make CM product recommendations (85%) and information about medication interactions (57%). The types of enquiries the pharmacy assistants referred onto pharmacists were principally related to safety issues: medication interactions (88%), pregnancy and breast feeding safety (77%) and side-effects of CM products (65%).

Pharmacy assistants were most likely to refer customer queries about CMs to the pharmacist (67%), followed by the in-store naturopath (20%), manufacturer help-line (16%) or external naturopath (6%). Approximately a quarter (28%) did not feel the need to refer to other individuals as they were confident in answering the questions themselves (all but 1 of these individuals had prior training in CM). When asked about the usefulness of the CM information given by pharmacists, responses ranged from somewhat or moderately useful (23%) to mostly or very useful (73%).

Looking for information about CMs

Pharmacy assistants frequently looked for information on CM (67% several times per month or more frequently), the information sought was primarily in relation to CM uses and drug interactions (both cited by 69% of respondents). Their main sources of CM information were pharmacists (64%) and shelf labels and product information brochures (55%). The factors considered most important to pharmacy assistants

were: information was frequently updated and contained both traditional and scientific information (44% and 40% respectively).

Recommending CM products in the pharmacy

Pharmacy assistants reported that it was they themselves who most frequently recommended CM products in the pharmacy (69%), followed by pharmacists (58%), specially trained CM assistants (21%), an in-store natural medicine practitioner if available (13%) or a combination of all of these (19%).

Just over half (56%) of respondents indicated that they had frequently recommended a CM product in the past 12 months. When recommending CM products, pharmacy assistants were most influenced by the manufacturers' reputation for quality (72%) and brand familiarity (55%). Lack of knowledge was the most cited reason for not recommending CM products (42%).

In terms of the types of information that pharmacy assistants provided to customers about CM products, most provided information from their own knowledge (73%) followed by information from information leaflets/books (54%) and product labels (50%). Those with prior training more frequently cited relying on their own knowledge compared with those not receiving training (78% vs. 31%; $p=0.0003$).

Pharmacy integration with complementary medicine

Most respondents (88%) agreed that the main pharmacy where they were employed was either fully or partly engaged in providing integrative care. Of the pharmacies where the respondents worked, 32% employed a naturopath. For those pharmacies where naturopaths were employed, the main role of the naturopath was thought to be quick consultations on the shop floor (84%), specialist CM product sales (71%), and general shopfloor sales of all pharmacy products (65%). Other roles were long consultations in a private room (48%) or providing staff education (36%). All pharmacy assistants working in pharmacies which employed a naturopath felt that this was a valuable service for both the pharmacy and customers.

CM products, prescribed medicines and adverse reactions

Only 18% of pharmacy assistants indicated that they always ask customers about concurrent use of prescribed medications and CM products; 19% 'often' ask, 40% 'sometimes' ask, 18% 'rarely' ask and 4% 'never'. Prior CM training did not affect whether the pharmacy assistant asked about concurrent medication use. Of those who do not always ask about prescribed medicines and CMs, the most frequently cited reasons for not asking was a lack of opportunity to ask (36%), forgetting (30%) and not thinking it was relevant (23%). Other reasons included assuming customers would disclose this information (21%), lack of confidence in discussing CMs (17%) and it being too time consuming (16%).

Of the pharmacy assistants completing this survey, 17% ($n=18$) indicated that a customer had reported an adverse drug reaction to them in the previous 12 months. When asked how they responded, 63% referred the customer to the pharmacist 32% notified the product manufacturer, 26% referred the customer to a medical doctor, 11% did nothing and none referred the customer to a hospital or notified ADRAC.

Self-rated knowledge of commonly used CMs

Respondents were asked to rate their own knowledge of a range of common CMs and indicate whether these products had proven clinical benefits for four nominated conditions (i.e. osteoarthritis, upper respiratory tract infections, diarrhoea, cardiovascular diseases). For all products those with training had higher self-rated knowledge (See Figure 13 in Appendix I).

Pharmacy assistants scored a mean of 12 out of a possible maximum score of 23 for the knowledge questions related to proven benefits of certain CMs and therapeutic outcomes.

Attitudes of pharmacy assistants regarding CMs

Pharmacy assistants in this study agreed or strongly agreed with the following statements relating to CM products within pharmacies: CM products were thought to have an important part in the financial business of the pharmacy (92%), pharmacists and pharmacy assistants have a place in advising customers about CM products (85% each) and there is confidence about the quality of available products (78%).

Respondents were less certain that the advertising of CM products in Australia is sufficiently well regulated (53% agreed or strongly agreed; 38% unsure) or that pharmacy assistants gave better advice to customers about CM than pharmacists (26% agreed/strongly agreed; 35% unsure; 35% disagreed/strongly disagreed).

Future CM training

The majority (92%) of respondents were interested in future CM training. In comparison with pharmacists, face-to-face seminars and lectures were the most popular format for future training (see Figure 14 in Appendix I).

National Naturopath and Western herbalist survey

Response Rate and Demographics

A total of 479 naturopaths and/or Western herbalists completed the survey. A response rate could not be calculated as a denominator is not known. ABS statistics from 2006 indicate that 2,982 Australians identified themselves as a naturopath²³ however the number of herbalists was not reported.

More women participated in the survey than men (84% vs. 16%) and participants ranged in age from 21 years to over 70 with 77% between the ages of 30-59 years.

Nearly all survey participants (95%) were currently in practice and 62% had graduated within the last decade. When asked for their highest level of qualification in naturopathy/herbal medicine, 37% reported having obtained an advanced diploma, 42% an undergraduate degree, 15% a postgraduate diploma, 4% a master's degree and 1% a PhD qualification.

Recent graduates (less than 5 years since graduation) were more likely to have attained an undergraduate degree qualification rather than a lesser qualification (54% vs. 28%; $p < 0.0001$). Practitioners that graduated 5 years ago or more were significantly more likely to have a graduate diploma compared to more recent graduates (22% vs. 7%; $p < 0.0001$).

The majority of participants (69%) either worked alone or with other CM providers and 7% listed pharmacy as their main place of practice. Further demographic and baseline data is presented in Table 5.

Table 5. Demographic and baseline data of naturopaths/herbalists

		N (%)*
Gender	Male	77 (16)
	Female	399 (84)
	Not reported	3 (1)
	Total number of respondents	479
Highest level of qualification in naturopathy / herbal medicine	Certificate	1 (0)
	Advanced diploma	172 (37)
	Undergraduate degree	191 (42)
	Graduate diploma	71 (15)
	Masters degree	19 (4)
	PhD	6 (1)
	Not reported	19 (4)
Year of graduation	2005 – 2009	156 (33)
	2000 - 2004	139 (29)
	1995 - 1999	65 (14)
	1990 - 1994	64 (13)
	1980 - 1989	50 (10)
	Before 1980	5 (1)
Graduating institution (6 most common)	Endeavour College / Australian College Natural Medicine / Melbourne College Natural Medicine, multi-sites	113 (24)
	Southern School of Natural Therapies, Vic	62 (13)
	Nature Care College, NSW	47 (10)
	Southern Cross University, NSW	36 (8)

	Australasian College of Natural Therapies / University New England, NSW	36 (8)
	Charles Sturt University, NSW	30 (6)
Working as a naturopath / herbalist (years)	Never	9 (2)
	Less than 1 year	59 (13)
	1-4	245 (31)
	5-9	107 (23)
	10+	150 (32)
	Not reported	9 (2)
Main place of practice	Multidisciplinary clinic with other CM practitioners	137 (30)
	Multidisciplinary clinic with medical practitioners	20 (4)
	Naturopathy / herbal medicine clinic as solo practitioner	103 (22)
	Home-based clinic	79 (17)
	In a pharmacy	31 (7)
	In industry (e.g. sales rep.)	36 (8)
	Not currently in practice	26 (6)
	Other	90 (19)
	Not reported	16 (3)

*% of total respondents answering question

Integration of naturopaths/herbalists into pharmacy

Twenty-four percent of respondents had worked as a naturopath/herbalist in a community pharmacy, and 36% (n=37) of these were currently working in community pharmacy. Thirty-eight percent of the whole sample would consider working as a naturopath/herbalist in a retail pharmacy.

Of the total sample, 24% (n=111) reported they had at some time worked in community pharmacy and 37 practitioners were currently working in pharmacy and 53% stated they would not consider working in a retail pharmacy.

Forty-four percent of the 479 participants (n=211) took the opportunity to comment in free text about the issue of integration of CMs and naturopaths/herbalists into pharmacy practice indicating great interest in the issue. The main concern was how to integrate different paradigms of healthcare within pharmacy and the main solution offered was to employ suitably qualified natural therapists (naturopaths/Western herbalists) to guide this.

The key concerns about integration were:

- qualified professionals needed on staff to adequately and safely recommend CM products to pharmacy customers (49 comments)
- practice of symptomatic prescribing in pharmacy incompatible with naturopathic paradigm of individualised diagnosis and treatment plan, requiring long consultations (35 comments)
- pharmacists' and pharmacy staffs' poor knowledge of CMs (35 comments)

Suggestions were also made as to how these concerns could be addressed, including:

- employing existing CM experts to safely recommend CM products to pharmacy customers in partnership with pharmacists (62 comments)
- offering mutual respect, suitable remuneration, adequate time and space to conduct consultations, and customer referral to in-store natural therapists (32 comments)

Roles of CM practitioners in pharmacy

Naturopaths/herbalists reported having a variety of roles in pharmacies, particularly conducting specialist CM product sales (74%) and quick consultations on the shop floor (62%). Approximately half (52%) conduct longer consultations in a private room and 51% provide staff education. Other roles included CM stock control, weight loss advice, dispensing of medicines (both CM and OTC drugs) and community education (including public talks, writing fact sheets, radio presentations).

Experience of working in pharmacy

Naturopaths/herbalists' experiences of working in retail pharmacy were generally positive and are presented in Table 6. The focus on sales in pharmacy was a major issue of concern for 38% of practitioners who had worked in pharmacy.

Fifty free text comments were received, with some negative comments about experiences of working in pharmacy centred around:

- Pharmacists: lack of respect or support for CM practitioners, under-utilisation of naturopaths' skills and specialist knowledge (18 comments)
- Pharmacy customers: reluctance to follow recommendations (especially lifestyle advice) and occasional preference for cheap rather than good quality CMs (10 comments)
- Limitation of working within the retail setting: on floor consultations hinders ability to provide best practice naturopathic care, lack of availability of 'practitioner only' CMs in-stores (14 comments)

Table 6. Naturopath/herbalists' experience of working in pharmacy

Feedback about working in community pharmacies	N (%)*
Learnt more about OTC CM products	59 (59)
Learnt how to provide advice quickly	59 (59)
Learnt more about pharmaceutical medicines	58 (58)
Enjoyed being part of a health team	47 (47)
Enjoyed working with a pharmacist	46 (46)
Focus on sales was problematic	38 (38)
Work was not interesting enough	27 (27)
Did not enjoy it at all	16 (16)
Can't remember	1 (1)
Other	11 (11)

*% of the total number of respondents for that statement (multiple answers possible)

Pharmacy work - hours and salaries

Forty-six percent of respondents employed in pharmacies were paid an hourly rate, the amount varying according to number of hours worked, and 42% received a regular wage as a casual or permanent staff member. Two thirds (66%) of practitioners that had worked in pharmacies found their pay structure unsatisfactory, with the majority wanting a more regular or predictable weekly income and an hourly rate better aligned with other healthcare professionals with their level of qualification (i.e. greater than \$25 per hour).

Inter-referrals between pharmacists and CM practitioners in the pharmacy setting

In-store naturopaths/Western herbalists reported that pharmacists were most likely to refer to them for CM product information (76%) and other CM information such as therapies or dietary information (68%). Eighty percent of in-store naturopaths referred to pharmacists for further drug information and 62% for safety and drug interaction information.

Knowledge of popular CMs

The first part of the knowledge section, included in each of the Pharmacists, Pharmacy Assistant and Naturopath questionnaires, assessed respondents' knowledge of the clinically proven uses of common OTC CMs. Participants were asked whether the listed CMs had a clinically proven use for a given list of indications and were given three possible responses: yes, no, unsure.

The correct knowledge scores (out of a potential maximum score of 23) for pharmacists and naturopaths/herbalists were not significantly different from each other, however, both pharmacists and naturopaths/herbalists were significantly higher than the pharmacy assistant scores (means 15, 15 and 12 respectively $p < 0.0001$) (see Figure 11).

The second part of the knowledge section, included in the Pharmacists and Naturopath questionnaires, assessed the respondent's knowledge of common CM-drug interactions. Participants were asked whether an interaction existed between the listed CMs and a list of commonly used medications, they were given three possible responses: yes, no, unsure.

The correct total knowledge score (a composite score from clinically proven plus interactions questions, out of a potential maximum score of 39) for naturopaths/herbalists was significantly higher than pharmacists (mean 24 vs. 21; $p < 0.0001$) (see Figure 12).

In the box and whisker plots presented as Figures 11 and 12 below, the upper and lower limits of the box represent 25 & 75 percentile (interquartile range) and outliers shown as dots and + represents the mean score.

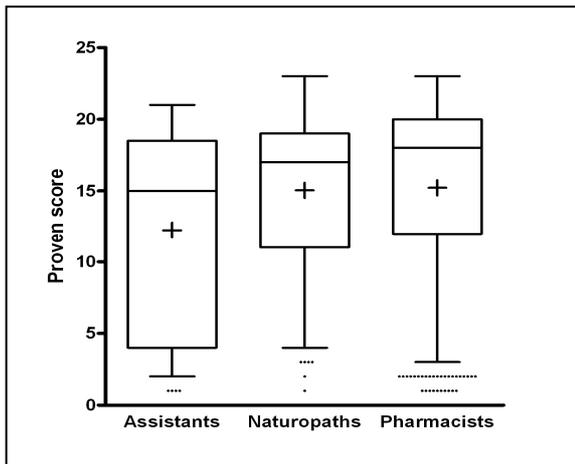


Figure 11. Comparison of knowledge scores between naturopaths/herbalists, pharmacists, and pharmacy assistants

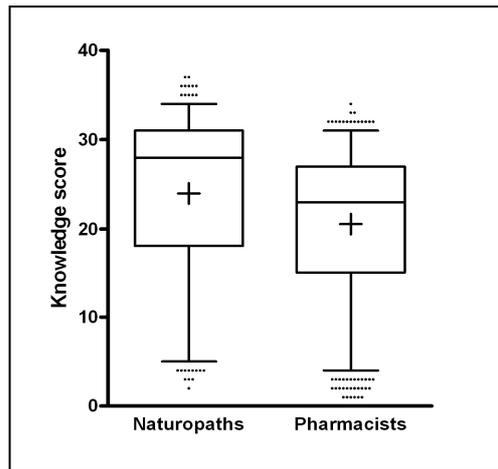


Figure 12. Comparison of total knowledge scores between naturopaths/herbalists and pharmacists

Study Limitations

There are several limitations to this study which influence the generalisability of the findings.

Several study phases relied on the collection of self-administered surveys. It is possible that people with an interest in the area of complementary medicine and with stronger positive or negative views about the topic may have been more likely to participate. Although all surveys were anonymous, responses may be biased by what respondents considered socially desirable answers.

The nature of the survey instrument limits the potential participants to those with who are able to read and comprehend the survey questions and who can read and write English. While this is unlikely to be an issue in three professional groups (pharmacist, pharmacy assistants and CM practitioners) it may be a significant issue in the customer group.

The results only reflect the views of individuals who visited community pharmacies in the three sites and had the time to stop and speak with the research assistant distributing the survey. Although research assistants deliberately visited sites at different times (e.g. Thursday evening, week day mornings) to recruit a broad spectrum of pharmacy customers, it is possible that the customers participating in the study do not fully represent all pharmacy customers and some groups may be over or under-represented. Nevertheless the comparability of the data to other published reports of CM use by the Australian general public suggests that this is not a significant factor.

While language and comprehension difficulties are unlikely to affect the professional group's ability to participate, respondents' knowledge of both the investigators and the funding source for the project may have influenced responses, however there is no evidence to suggest that this is a significant effect.

The sample size in this study, particularly for the pharmacy assistant group, was small relative to the total population in each group and this limits the broader inferences that can be drawn from the data.

All data collected in this study was retrospective in nature and the recall of CM use, advising and referral activity and whether or not adverse reactions had been reported may suffer from recall bias. It is suggested that based on the findings of this study prospective data, particularly on adverse effects, be collected. With respect to the knowledge questions, definitions of terms used in this section were not provided to respondents and researchers obtained the 'correct' answers from two texts. The use of other generally used, authoritative texts may have provided a slightly different set of 'correct' answers however there is no reasons to expect major differences would have been found. This is an area that requires further investigation.

Discussion and recommendations

The project investigated the integration of CMs into community pharmacy practice, taking into account the behaviours and perceptions of customers, pharmacists and pharmacy assistants and naturopaths/ natural therapists.

This work demonstrates CMs use is widespread within the community, with significant involvement from the community pharmacy sector and with opportunities to expand the professional contribution of pharmacists into the quality uses of these products.

CM use and Australian pharmacies

While it is difficult to provide exact data on the use of complementary medicine in Australia it is clear that a significant proportion (up to 75%) of the Australian public have used complementary medicine in a number of different forms.^{4-6,10,24,25} Further, data from the Australian Bureau of Statistics shows an 80% increase in people employed as complementary practitioners in the 10 years to 2006; in the same time period the number of people visiting CM practitioners within a 2 week period rose from approximately 500 000 to 750 000.²⁵ Together with data from Xue et al. who estimates out-of-pocket expenditure for complementary medicine products at \$1.86 billion dollars, there is little doubt about the impact of CMs in Australian health care.⁴

The present study demonstrates that CMs remain popular amongst pharmacy customers and this data is consistent with that from previous surveys on use of CM by the general public.^{8-10,26-29} This study identified 72% of pharmacy customers had used at least one CM product in the previous 12 months and 39% had visited a CM practitioner.

Similar to other studies of the general public and specific Australian sub-populations, vitamin supplements feature most prominently in particular multivitamins, vitamin C and vitamin B complex. Of the food supplements, fish oils and probiotics were most commonly used.^{1-3,5,10,30} Herbal medicines were less commonly used than vitamin supplements. Of these, echinacea, ginkgo biloba, St Johns wort and valerian were most popular. This pattern of use (popularity of vitamin C, multivitamins and fish oil supplements) is consistent to that reported for CM product use in other studies.^{5,31}

In our study, the use of CMs by community pharmacists (80%) mirrors that of the general Australian population, whereas hospital pharmacists reported a much lower use (58%) in the past 12 months. This confirms findings from a previous study which suggested that pharmacists working in community/out-patient settings and pharmacists living in non-urban areas were more likely to report use of CMs than others.³² Whilst the study did not directly explore reasons for these differences, it is possible that having less knowledge of CMs and relatively limited access to these products in the hospital setting, compared with community pharmacists, are influences on frequency of use. It is also possible that usage by hospital pharmacists may be influenced by their strong background in evidence based practice.

We found pharmacy assistants reported the highest frequency of use (97%) compared to pharmacy customers and pharmacists. It is not clear why usage amongst this group is higher than for community pharmacists as both have ready access to the products. Possibly, the greater frequency of customer discussion about CMs and higher prevalence of manufacturer training are influences.

When pharmacists, pharmacy assistants and customers were compared for personal use of CMs, a significant difference was observed between the three groups (76%, 96%, 72%; $p < 0.001$) with the lowest usage reported for pharmacy customers.

In 2007, results from the Health and Medical Research Opinion Poll indicated that just over half of Australian adults surveyed reported they have confidence in CMs.²⁸ That survey asked 630 adults Australia wide about their attitudes. Our study of pharmacy customers also found the majority of people using CMs are confident using CMs and most think they are very effective or effective enough.

Purchasing behaviours in community pharmacies

Recent industry statistics reveal that pharmacy is the preferred place for CM sales and now accounts for 48% of all CM purchases.³³ Pharmacy was also confirmed as the main site of purchase for CMs in the 2008 NPS report³⁴ and was confirmed in this study.

In our study both pharmacists and pharmacy assistants felt that CMs are an important part of the financial business of retail pharmacy. Our study further indicates that 60% of pharmacy customers using CMs generally purchase them from pharmacies, chiefly because of convenience and product availability not necessarily because of the service they receive. Those customers choosing to purchase CMs elsewhere tend to do so because they believe that pharmacies are not price competitive and that cheaper outlets exist.

This study highlights that it would appear that in most cases the pharmacist does not participate in CM selection and sales as many customers self-select or purchase CMs based on recommendations by pharmacy assistants, medical practitioners and naturopaths or herbalists. This is an unrealised opportunity for pharmacists as we also found the majority of customers expect pharmacists to recommend CMs if they are effective. Pharmacy assistants are currently the main recommenders of CMs in the retail pharmacy setting however they too saw a need for pharmacists to play a greater role in this regard. Furthermore, we have identified that pharmacists and pharmacy assistants already perceive they have a professional responsibility to provide customers with information and advice about CM products yet our combined results suggest that pharmacists could be more active in this role.

CM and QUM within the pharmacy setting

QUM seeks to optimise medicines use (including prescription and over-the-counter) in order to improve health outcomes for all Australians.⁵⁶ The fundamental principles of QUM are: judicious use of the best evidence based treatments available which includes the appropriate, safe and efficacious use. There are a range of facilitators for QUM to be achieved and these include adequate professional support, training, knowledge, infrastructure and guidelines just to name a few. Many of these are relevant to CM use.

Pharmacists are accessible, highly trusted primary health care providers with a professional obligation to provide information and guidance to patients about the quality use of all medicines, which, according to the Australian National Medicines Policy, includes CMs. They also have considerable scope to expand their capacity to assist people to better manage their health and wellbeing and encourage health promotion activities.

Our study reveals that the adoption of QUM principle into Australian pharmacy practice does not routinely extend to include CMs.

Despite the widespread use of CMs by pharmacy customers, the growing evidence available for a number of CMs and pharmacists' obligation to include CM counselling in their routine practice,³⁵ we found that pharmacy assistants more frequently than pharmacists advised customers about CM products in the retail pharmacy setting. Moreover, in pharmacies employing a CM practitioner even fewer pharmacists were involved in advising on CMs. Most pharmacy assistants were confident advising customers and often relied on 'their own knowledge' when advising customers which is of concern as most of their training comes from manufacturer developed courses and their knowledge of CMs is poor, compared to pharmacists.

The Australian National Training Packages (Certificate level)⁵⁷ for pharmacy assistants includes an elective option on provision of information, products and services in relation to complementary medicines however there is little other explicit discussion about the role of pharmacy assistants with respect to CMs. Indeed there is very little published literature on the role of pharmacy assistants generally and to our knowledge this is the first study to examine the use and attitudes towards CMs by pharmacy assistants.

It is somewhat reassuring that pharmacy assistants in this study refer to pharmacists for further information, particularly regarding issues of safety. Whether this is due to the assistants' self-awareness that they lack safety knowledge, discomfort taking responsibility for such advice or simply a reflection of the normal pattern of referral within pharmacies is unknown. It is disheartening however that most pharmacists rely on self-education regarding CMs, claim to lack sufficient quality CM resources and did not score particularly highly on the knowledge test. The NPS list of recommended CM resources found at http://www.nps.org.au/research_and_evaluation/research/current_research/complementary_medicines/rev_iew_of_info_resources can serve as a useful guide for pharmacists.

Recommendation ONE: The role of the pharmacist and pharmacy assistant with regards to QUM and the incorporation of CM must be clearly defined by the relevant professional bodies (i.e. Pharmacy Guild, PSA and SHPA).

Customers open to discuss CMs with pharmacists

It is often reported that people using CMs do not routinely disclose this use to their medical practitioner. According to a review of 12 studies, the rate of non-disclosure of those using CM is as high as 77% in

some studies.⁵⁸ The main reasons patients provide for not disclosing their use of CM to their medical practitioner are concerns about a negative response by the practitioner, the belief that the practitioner does not need to know about their CM use, and the fact that the practitioner does not ask.³⁶

This study reveals that these pharmacy customers do not have the same concerns about discussing their use of CMs with pharmacists as less than 10% of customers using CMs reported being uncomfortable about this disclosure. Furthermore, most customers thought it was important for pharmacists to be aware of the CMs people are taking. However, the problem of the practitioner not asking about use of CMs also exists in pharmacy, particularly in the retail setting where significantly fewer pharmacists ask customers presenting with prescriptions about CMs than hospital pharmacists. When probed further, the main reason community pharmacists gave was forgetting to ask, this was followed by a perceived lack of opportunity and, for some, thinking it was not always relevant. Based on these findings, it appears that strategies to include CM in medication discussions with patients is more effective in the hospital setting and clear guidelines are required for community pharmacists about interviewing customers and counselling them to promote safe and appropriate use of CMs as per QUM principles.

Recommendation TWO: Ongoing education programs, ratified by the relevant professional bodies, to be developed, delivered and evaluated, which will encourage the incorporation of CMs within routine medication history taking by pharmacists.

Sources of recommendation and information

Community pharmacy is a major supplier of CMs yet pharmacists are not widely utilised as a source of advice about these products. In this study, as in other Australian and international studies, friends and family are consistently reported as the primary source of CM information used by consumers.^{9,37-40} Once again this is an unrealised opportunity for pharmacists who could play a greater role as information providers. In particular, we found customers are expecting safety information about CMs from their pharmacists, as are pharmacy assistants.

It appears many (89%) of pharmacists have noticed that customers are now expecting more information about CMs from their pharmacists than 5 years ago and in particular, most (92%) think they should be playing a greater role in providing customers with drug interaction information. About three quarters also think they should be playing a greater role recommending CMs than they currently do.

From our research it seems that pharmacists feel ill-equipped to deal with CM enquiries or make recommendations. Many have not received any formal training through the tertiary education system, many don't refer to specialised CM resources or have them available, over half stated they had insufficient knowledge to recommend CMs as part of standard practice, some lack confidence and some say they lack time and opportunity.

The findings of perceived insufficient knowledge and lack of confidence are similar to past surveys of Australian community and hospital pharmacists which showed that pharmacists generally rate their knowledge relating to CMs as inadequate and are not confident in answering customer enquiries.^{18,41} In our study the majority of pharmacists (73%) reported that they gained CM product knowledge through self-directed learning and only 30% had attended seminars made available by professional organisations and 28% had received relevant undergraduate education. Based on pharmacists' feelings of inadequacy in this area and the observation that less than half of pharmacy customers taking CMs were convinced their pharmacist provided useful information about CMs, further education focusing on this needs to be a high priority.

Although the sample size in this study of pharmacy assistants is small there is little doubt that this group see themselves as confident and capable of providing CM information with 76% completely or very confident in discussing CM with customers and 76% indicating that the information they provide to customers about CM products is from their own knowledge. These individuals were also most frequently asked about, and provided, CM product recommendations to customers; this is consistent with two other studies which also noted the role of pharmacy assistants in recommending CM products. The 2004 Pharmacy Guild of Australia Workforce and Career Options for Pharmacy Assistants Report⁴² indicated that both pharmacists/pharmacy managers and pharmacy assistants saw a major role of assistants in providing advice on complementary medicines (e.g. vitamins). Further pharmacists/pharmacy managers reported that there was capacity for this role to be extended past the current level. Wright & Emmerton also reported that 22% of supplement purchases involved a pharmacist assistant; this was greater than for pharmacists (4%) and similar to that for in-store naturopaths (26%).⁵⁹ In addition their involvement was greater when customers were purchasing products for another person rather than themselves (32% vs. 19%). Despite this frequent role as CM product recommenders, data from the self-rated-knowledge and

proven knowledge component of the survey suggest that while confident, pharmacy assistants' knowledge may not be strong enough to support the role they play in product recommendation.

Pharmacists have a professional responsibility to customers about the safe and appropriate use of medicines, indeed it is one of the profession's primary roles. Further investigation is required to determine whether the current situation where many pharmacists rely on pharmacy assistants to counsel customers about CMs, without any pharmacist involvement, is a neglect of pharmacists' professional duties.

Recommendation THREE: Each pharmacy premises should be required to hold two resources from the NPS recommended list of high quality CM resources to promote QUM.

Recommendation FOUR: Evidence based CM information should be incorporated into all relevant professional pharmacy resources.

The overwhelming majority of customers taking CMs had never noticed the term 'AUST L' on a CM product label and the majority of those that had did not have a correct understanding of what related to.

Recommendation FIVE: A consumer orientated educational program be developed, implemented and evaluated which aims to improve consumers' understanding of the differentiation between products denoted with an AUST L

Education and training

In order to overcome the knowledge deficit of both pharmacists and pharmacy assistants, additional CM training is required. According to our study this would be welcomed by the majority of pharmacists (85%). These findings are in line with the findings from a former survey which found that 80% of Australian pharmacists supported CM training at undergraduate and post-graduate level.⁴³

Various delivery models would be acceptable to pharmacists, however more than half of those surveyed preferred short online courses as a delivery method. Consensus would have to be reached on the organisation providing the training given that this study found that significantly more community pharmacists preferred the PSA to conduct such education, whereas hospital pharmacists preferred the training to be offered by the NPS.

Moreover, given the high demand for undergraduate CM education (76% of pharmacists thought that it was very important for undergraduate pharmacy students to learn about evidence based CMs) and the observation that pharmacists with undergraduate education in CM have better knowledge about CMs, CM education should receive high priority.⁴⁴ Firm recommendations and required competencies from professional and educational bodies to assist CM curriculum development are needed. As a first step forward the PSA position statement⁴⁵ should be updated to include similar aspirations as those from the AMA policy statement 2002⁴⁶ which "calls on educational institutions & professional colleges to ensure that medical education provides basic information about CM in relevant areas such as pharmacology and evidence based therapies."

Many pharmacy assistants had undergone some form of training in CM yet most (92%) were interested in further training. In contrast to pharmacists, pharmacy assistants had and wanted involvement of CM product manufacturers in education, both in terms of past training provided and as a preferred provider of future training. Whether industry involvement strengthens assistants' CM knowledge base in a general way or focuses it specifically on product promotion is unknown and is an area which requires further attention to ensure that customers will receive balanced, high quality CM information through their interaction with pharmacy assistants.

Recommendation SIX: The PSA position statement on CM should be updated to reflect evidence based principles and include educational and practice goals. (The AMA position statement could be used as a guide).

Recommendation SEVEN: All undergraduate curricula and competency based assessments associated with implementation and/or evaluation of QUM principles in pharmacy practice should include CMs as a component. Education should not be limited to adverse drug reactions and interactions, but also include evidence based information about potential benefits of CMs to improve patient outcomes.

The 'new consumer' wants more

Market research, and more recently health services and social science research, has adopted the concept of the 'new consumer' to describe customers/patients who are becoming more demanding.^{47,48} They tend to be information strong (well-informed) and information seeking (inquisitive); ask critical questions; show

a desire to initiate dialogue; seek counselling and in general no longer blindly accepted the authority of the pharmacy staff.

Customers have accepted the integration of CM into pharmacy and are expecting more interaction with pharmacists in this regard. Nearly all customers expect pharmacists to be knowledgeable about CMs and recommend CMs which are effective, to provide safety information, screen for drug-CM interactions and record patients' use of CMs in their medication profile. They also want effective CMs to have a 'tick of approval' and be accompanied by more detailed product information similar to prescription medicines.

Given the consumer-driven development towards holistic and integrative healthcare,⁴⁹ pharmacists' CM knowledge and counselling should not be limited to adverse effects and interactions, but should include proactive recommendations about evidence-based CMs. We have found that pharmacists are aware that their customers are expecting more information from them about CMs compared with 5 years ago. The majority of pharmacists also believe they have a professional responsibility to counsel patients about CMs and should play a greater role in providing safety and drug interaction information. However, our study also shows that half the pharmacists surveyed recommended a CM product only a few times a week or less. Moreover, there was a stronger agreement among pharmacists to counsel customers on safety aspects of CMs than directly recommending CM products.

Recommendation EIGHT: Ongoing professional educational opportunities must be made available for the existing pharmacy workforce, both pharmacists and pharmacy assistants, so CMs can be incorporated into current QUM practice

Three models of integration have evolved

For decades, the concept of integration has transformed innovation and change in healthcare and consisted of forging links between providers, caregivers and patients. Integration reduces fragmentation and aims to improve efficiency and effectiveness in healthcare.⁵⁰ The term 'integrative medicine' (IM) as applied in the area of CM is a relatively recent development and has been defined by NCCAM as health care that "combines mainstream medical therapies and CM therapies for which there is some high-quality scientific evidence of safety and effectiveness."⁵⁰

With this in mind, it is interesting to observe the manner CM is becoming integrated into community pharmacy. Our study has revealed that integration has already occurred at a superficial level as nearly all pharmacies stock CM products on their shelves, with a small percentage also stocking specialty lines such as liquid herbal extracts and practitioner only products. It has further revealed that three models of integration have emerged.

The most prevalent model is one where pharmacy assistants have the responsibility of ensuring appropriate and safe use of CMs as they are the first point of call for customer enquiries and recommendations. In this scenario there is little pharmacist involvement. Pharmacists may provide information when pharmacy assistants ask them, in particular safety information; however they do not take on a proactive role in counselling customers about CMs.

The second model is one where the pharmacist takes on a larger role and actively incorporates CM recommendations into their practice. We found that 47% of pharmacist respondents already describe their practice as 'integrative' because of this behaviour, with a further 43% describing their practice as partly integrative. This scenario does not preclude pharmacy assistants from playing a role in CM recommendations however, there appears to be more interaction between the pharmacist and customer in this second model compared to the first.

The third model involves the incorporation of a naturopath/natural therapist into the pharmacy setting to provide customer information and recommendations, private consultations and sometimes also staff education. In pharmacies where a naturopath was employed, even fewer pharmacists were involved in advising customers about CMs suggesting that they have largely transferred this responsibility to the store naturopath.

When considering the positive feedback from pharmacists and pharmacy assistants that have worked with naturopaths in community pharmacy and the generally positive feedback from naturopaths themselves, it appears that this arrangement provides benefits for pharmacists and their staff, as well as meeting the needs of customers.

Whilst only 18% of surveyed pharmacists reported that a naturopath/natural therapist is currently employed at their place of work, our results indicate that the number of pharmacies adopting this model may increase in the future. If developed carefully, this model could provide several advantages to

pharmacists as health workforce shortages and the number of people with chronic disease increases and the burden on the pharmacy workforce increases in response.

The knowledge scores obtained by pharmacists and naturopaths/herbalists in this study suggest that there are some naturopaths with knowledge of popular CMs which is comparable or possibly greater than pharmacists and a substantial number have received advanced diploma or bachelor degree education. Having an appropriately credentialed naturopath on staff may allow pharmacists and pharmacy assistants more opportunity to focus on other tasks. More customers will have the opportunity to receive nutritional and CM advice from a trained practitioner and pharmacists can share the burden of screening customers for adverse effects and drug interactions.

This model of integration has several pitfalls that cannot be ignored such as: the possibility of employing an inappropriately trained naturopath who fails to provide sensible, advice, or worse, provides dangerous advice and operates outside a scope of practice considered acceptable to the pharmacist. Until registration of naturopaths is undertaken, pharmacists must undertake their own credentialing of naturopaths before employment. Pharmacists must not ignore their professional duty to become familiar with CMs taken by their customers and provide counselling about their safe and appropriate use.

It is imperative that an evidence based approach be applied to the provision of CMs and that the individual pharmacy and any employed naturopath have an agreed and common approach to the specific products available. In addition, there needs to be an agreed approach relating to referrals for input from the other practitioner where their expertise is required.

Recommendation NINE: Pharmacy practice guidelines need to be established which promote QUM in settings where pharmacists and naturopaths/natural therapists are currently working together. These may include advice about the employment and credentialing of naturopaths/natural therapists, defining the roles and responsibilities of both parties, issues about sharing patient records, inter-referrals, communication and scope of practice. Guidelines should be developed in conjunction with appropriate representation from the naturopathic workforce.

The naturopath/herbalists' perspective of working in pharmacy

Based on the combined findings from the pharmacist, naturopath/herbalist and customer surveys, it appears there may be greater employment opportunities than previously recognised for suitably qualified naturopaths/Western herbalists in the community pharmacy setting.

To attract and retain well educated naturopaths, several issues should be addressed which are of concern to naturopaths, chiefly, providing opportunities for them to conduct longer consultations when necessary to enable 'best practice', remuneration negotiation which reaches a satisfactory agreement for both parties, and stocking some of the practitioner-only product lines favoured by naturopaths. In return, naturopaths must be aware that pharmacists expect them to increase product sales and act as an information source to them, their staff and customers.

Recommendation TEN: Further research is required to develop and evaluate a best-practice integrative model in community pharmacy involving appropriately trained naturopaths/natural therapists.

Safety of CMs

According to the Australian Commission on Safety and Quality in Health Care (ACSQHC), "medicines are the most common treatment used in health care."⁵¹ In any given two week period, nine out of ten older Australians have taken at least one medicine with around seven out of ten Australians in general having taken at least one medicine.⁵² This study further identified that 6 out of 10 pharmacy customers take prescription medicines on a daily basis and 5% describe their health as poor.

Roughead and Lexchin reported in 2006 that over 1.5 million people suffer an adverse event from medicines each year in Australia.⁵³ Importantly, adverse events result in approximately 180,000 hospital admissions, of which 30%-50% are preventable.⁵⁴ Pharmacists and their staff play a major role in promoting medication safety and are responsible for Australians avoiding days in hospital, visits to medical practitioners and sick days.

Our results suggest that although many pharmacy customers taking CMs do not receive professional advice regarding their use, the incidence of serious adverse events is relatively low as only 4 people out of the 1121 surveyed reported an adverse reaction which required hospitalisation. This represents 0.4% of the total sample. Whilst this low figure is reassuring, it only provides an estimate as causality cannot be determined from the limited information collected. Furthermore, it remains unknown how well patients

experiencing adverse reactions to CMs recognise them as such, whether proposed adverse reactions were due to misuse or overuse of products, intrinsic or extrinsic product factors. This work was undertaken in the ambulatory setting and consequently may not represent individuals who may have had serious and long term consequence of a reaction to CMs.

Many customers experiencing an adverse reaction to a CM product were not inclined to tell their pharmacist. A similar finding was made in a UK study which demonstrated that consumers of herbal medicines are less inclined to inform their healthcare professionals of adverse reactions than if the reaction was due to a conventional drug.⁵⁵ As a result, adverse reactions to CMs are likely to remain under-reported to pharmacists until customers are encouraged to openly discuss their use.

Recommendation ELEVEN: An educational program should be developed, implemented and evaluated which encourages consumers of CMs to report actual and suspected adverse reactions to pharmacists and other health care professionals.

Recommendation TWELVE: Further research is required to identify the incidence and nature of adverse reactions to CMs in the community. Specific research should be undertaken to determine suitable methods to support the reporting of these events through community pharmacies.

Study recommendations in relation to the Expert Committee on Complementary Medicines in the Health System government recommendations

In May 2003, the Australian Government established the Expert Committee on Complementary Medicines in the Health System (the Expert Committee) which was asked to consider the regulatory, health system and industry structures necessary to ensure that the central objectives of the National medicines Policy are met in relation to complementary medicines⁶⁰. The Expert Committee made 49 recommendations to government⁶¹ and in May 2005, government responses to these recommendations were delivered in a report⁶². Many of the recommendations resulting from the findings of this particular study are in alignment with recommendations from the original Expert Committee.

Recommendations 2, 3, 4, 5, 8 and 9 of this report relate to the Expert Committee's recommendation 25 which discusses the need to determine the CM information needs of healthcare professionals and consumers, options for conveying that information, the need to increase their awareness of the benefits and risks of CMs and to develop knowledge and skills to use medicines appropriately. A study conducted by the National Prescribing Service (NPS) and commissioned by the Department of Health and Ageing³⁴ has previously addressed some of these issues and this study has provided confirmation of some of those NPS findings and further added information about pharmacy assistants, naturopaths and western herbalists who were not investigated previously.

Recommendations 2, 11 and 12 of this report relates to the Expert Committee's recommendation 20 and confirms the need to improve reporting about adverse reactions, for healthcare professionals to be encouraged to ask people about their use of CMs when taking a history and for more research to be conducted to investigate the safety of CMs. It also reinforces the need for consumer education about reporting adverse reactions.

Recommendations 2, 3, 7, 8 and 9 relating to the practice of QUM and the need to incorporate CMs within this framework supports the Expert Committee's recommendations 43 and 44 and indicates that any strategies implemented thus far to improve the incorporation of CMs into pharmacists' practice of QUM have been insufficient.

Conclusions

This study investigated the integration of CMs into community pharmacy and has provided a rich source of information regarding CM integration into pharmacy practice from the perspectives of the pharmacist, pharmacy assistant, customer and naturopathic/herbalist workforce.

Pharmacy customers purchase CMs in the pharmacy and with this, raised their expectations of the integration of CMs into the pharmacists professional care. Most pharmacy customers are taking OTC CMs and nearly all customers expect pharmacists to be knowledgeable about these products and recommend CMs which are effective. Customers also want pharmacists to provide safety information, check for drug-CM interactions and record their use of CMs in the medication profile. Additionally, pharmacists and pharmacy assistants have observed that customers want more CM information from them than five years ago.

Despite pharmacists' professional obligation to provide information and guidance to patients regarding the quality use of all medicines, this behaviour does not routinely extend to include CMs. Several barriers have been identified which may account for this important omission. These are: pharmacists' perception of having inadequate knowledge, reliance on self-directed learning and lack of formal training, inadequate access to CM information resources, and lack of confidence, time and opportunity. Evidently pharmacists require more education at undergraduate and postgraduate levels, guidance about their role in regards to counselling customers about CMs and information about CM specific resources which will help them advise customers.

Currently pharmacy assistants are most often making recommendations and giving customers advice about CMs in the retail setting. Data from this study suggests that while confident, pharmacy assistants' knowledge may not be strong enough to support the role they play in product recommendation. This is an opportunity for educative strategies which will strengthen and perhaps extend the role of pharmacy assistants.

The incidence of adverse reactions attributed to CMs appears low, as reported by customers. Those that have experienced an adverse reaction often describe it as mild and many are sufficiently confident to decide to stop using the suspected product without professional advice. However, adverse reactions to CMs are likely to remain under-reported to pharmacists until customers are encouraged to openly discuss any side effects they experience.

One of the unique findings in the study was that nearly two-thirds of customers taking CMs thought it was important for a natural medicine practitioner to be located in community pharmacies and approximately half of pharmacists surveyed indicated they would employ a naturopath to work in store. These findings, combined with our other study results, suggests that integration of these health care providers into the pharmacy setting could increase in future years, provided that naturopaths and pharmacists' professional and business needs are met. Further research is required to establish how this model may work. Guidelines will also be necessary to promote patient safety and wellbeing in this more integrated model.

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Appendices

- Appendix A. Advisory Group terms of reference (see attached file)
 - Appendix B. Pharmacy customer survey questionnaire (see attached file)
 - Appendix C. Phase 1 Pharmacy information and Consent form (see attached file)
 - Appendix D. Focus group discussion schedule (see attached file)
 - Appendix E. Pharmacist survey questionnaire (see attached file)
 - Appendix F. Pharmacy assistant survey questionnaire (see attached file)
 - Appendix G. Phase 5 Pharmacy assistant Information and Consent form (see attached file)
 - Appendix H. Naturopath/Western herbalist survey questionnaire (see attached file)
 - Appendix I. Additional tables and figures
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Appendix I. Additional tables and figures

Table 7. Demographic data of pharmacy customers

		N (%)*
Gender	Men	275 (25)
	Women	805 (74)
	Not reported	41 (4)
	Total number of respondents	1121
Highest level of education attained	Did not go to school	6 (1)
	Secondary education	343 (31)
	Certificate level	218 (20)
	Diploma/Advanced Diploma level	137 (13)
	Bachelor degree	187 (17)
	Graduate diploma or certificate	67 (6)
	Postgraduate degree	110 (10)
	Not reported	24 (2)
Marital status	Married/de facto	674 (62)
	Separated/divorced	114 (10)
	Never married	209 (19)
	Widowed	76 (7)
	Not reported	19 (2)
Current work status	Employed full time	327 (30)
	Self employed	108 (10)
	Not in the labour force	330 (30)
	Employed part time	241 (22)
	Unemployed	60 (6)
	Not reported	26 (2)
Current age (years)	15-19	23 (2)
	20-29	162 (15)
	30-39	184 (17)
	40-49	187 (17)
	50-59	208 (19)
	60-69	177 (16)
	Over 70	142 (13)
	Not reported	9 (1)

* % of total respondents who answered these questions

Table 8. Baseline date of pharmacy customers

		N (%)*
Taking prescription medication on a daily basis	Yes	672 (61)
	No	421 (38)
	Not reported	14 (1)
Taking the following medications	Warfarin	25 (4)
	Oral contraceptive	99 (14)
	Digoxin	6 (1)
	None of these	521 (76)
	Not reported	37 (5)
Self-reported pre-existing medical conditions	Hypertension	269 (24)
	Asthma	127 (12)
	Arthritis	229 (21)
	High cholesterol levels	180 (16)
	Diabetes	60 (5)
	None of the above	530 (48)
	Not reported	39 (4)
Self-described overall health	Excellent	124 (11)
	Very good	394 (36)
	Good	521 (47)
	Poor	58 (5)
	Not answered	10 (1)
Consulted a medical doctor in previous 12 months	Yes	1028 (93)
	No	69 (6)
	Not reported	6 (0.5)
Consulted a CM practitioner in the previous 12 months	Yes	433 (39)
	No	662 (60)
	Not reported	8 (1)

* % of total respondents

Table 9. Customers' (CM users) responses to attitudinal statements

	Responses % of the total number of respondents for that statement				
	SA N (%)*	A N (%)	NAD N (%)	D N (%)	SD N (%)
My pharmacist is fully aware of any CMs I use	79 (11)	164 (22)	193 (26)	182 (25)	120 (16)
I feel comfortable telling my pharmacist about my use of CMs	165 (22)	372 (50)	140 (19)	46 (6)	19 (3)
It is important for pharmacists to be aware of the CMs people use	290 (39)	337 (46)	91 (12)	21 (3)	3 (0)
My pharmacist encourages questions about CMs	88 (12)	201 (27)	295 (40)	112 (15)	37 (5)
My pharmacist provides useful information about CMs	103 (14)	250 (34)	261 (36)	91 (12)	27 (4)
I think it's important for a natural medicine practitioner to be located in a pharmacy where they sell CMs	179 (24)	300 (41)	185 (25)	63 (9)	11 (2)
I trust my pharmacists advice about CMs	156 (21)	348 (47)	160 (22)	57 (8)	17 (2)
It is important for pharmacists' to be knowledgeable about CMs	299 (41)	383 (52)	44 (6)	10 (1)	2 (0)
Pharmacy assistants give me more advice about CMs than my pharmacist	61 (8)	204 (28)	332 (25)	111 (15)	26 (4)
My pharmacist does not give me information about CMs	40 (6)	145 (20)	281 (39)	197 (27)	66 (9)
I have confidence in CMs	172 (23)	376 (51)	163 (22)	22 (3)	1 (0)
I have confidence in non-prescription medicines (eg cold and flu tablets)	91 (12)	400 (54)	160 (22)	65 (9)	19 (3)
I have confidence in prescription medicines prescribed by my doctor	221 (30)	380 (52)	81 (11)	41 (6)	10 (1)
SA= strongly agree; A=agree; NAD=neither agree nor disagree; D=disagree; SD=strongly disagree					

* % of total respondents

Table 10. Sources of information about CMs for pharmacists

Sources of information	N (%)*
Information from own knowledge	397 (80)
Information from textbooks, internet, journals	343 (69)
Rely on label information	211 (43)
Rely on product information leaflets/books	193 (39)
Feedback stories from other customers	126 (26)
Rely on shelf talker information	18 (4)
Don't give customers additional information	5 (1)
Other	12 (2)

*% of total respondents answering question (multiple answers possible)

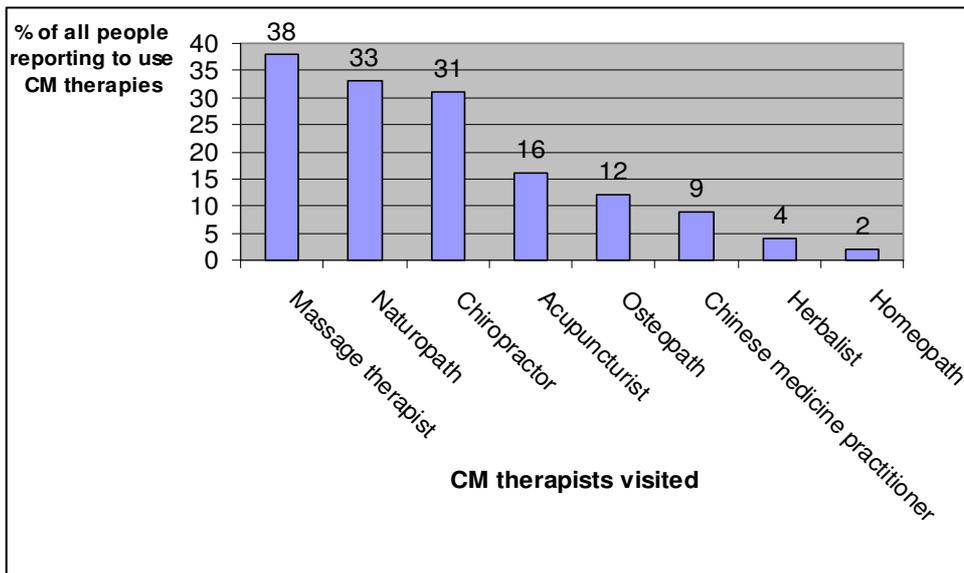


Figure 11. CM practitioners seen by pharmacy customers

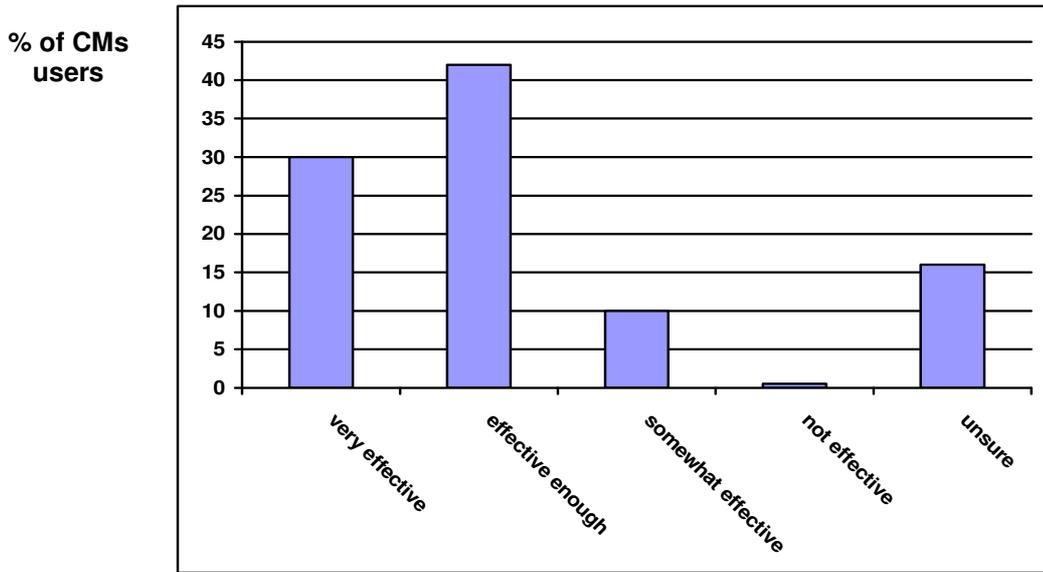
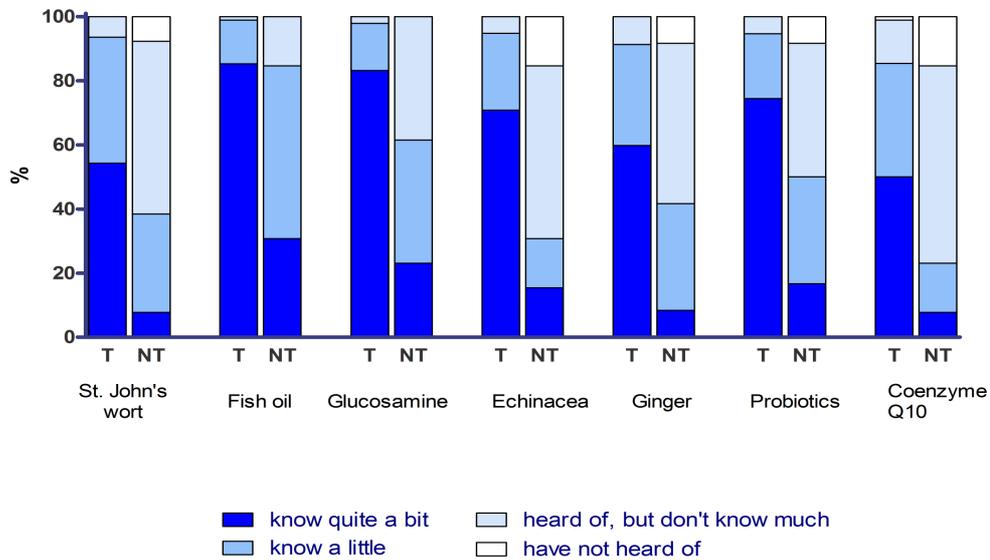


Figure 122. Customers' perception of effectiveness of CMs taken



(T = prior training in CM; NT = no prior training in CM)

Figure 13. Pharmacy assistants' self-rated knowledge about a range of CM products

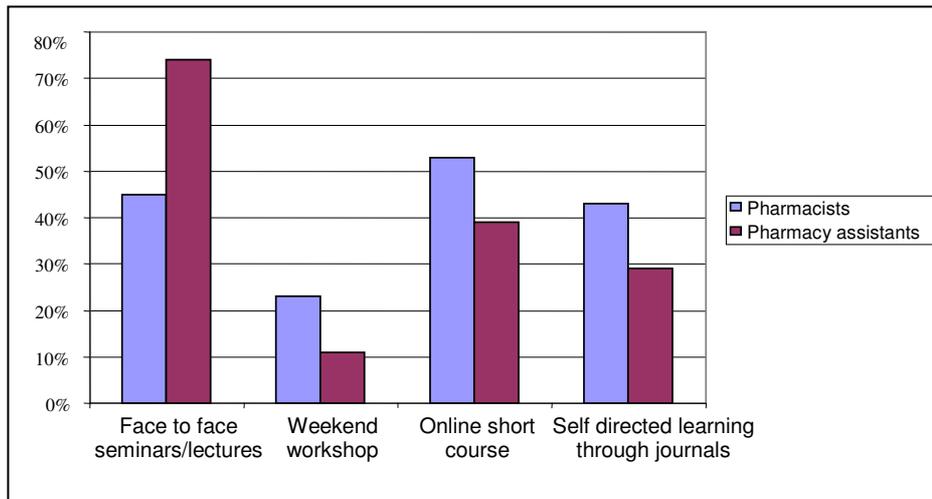


Figure 13. Preferred method of further training in complementary medicine



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UNIVERSITY



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UNIVERSITY



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