



National Prescribing Service Limited

Complementary medicines: attitudes and information needs of consumers and healthcare professionals

NPS is an independent, non-profit organisation for Quality Use of Medicines,
funded by the Australian Government Department of Health and Ageing.

ABN 61 082 034 393 | Level 7/418A Elizabeth Street Surry Hills 2010 | PO Box 1147 Strawberry Hills 2012
Phone: 02 8217 8700 | Fax: 02 9211 7578 | email: info@nps.org.au | web: www.nps.org.au

Copyright

© Copyright for the text content, document structure, formatting, layout and presentation is held by National Prescribing Service Limited. Permission is granted to view these documents for private or academic use. You may download, display, print or reproduce this material in unaltered, complete form only for personal, non-commercial use or for non-commercial use within your organisation. You cannot redistribute this material without the written permission of National Prescribing Service Limited. The documents and their associated electronic files cannot be mirrored, retransmitted, broadcast or sold without specific written permission from the National Prescribing Service Limited. 2007.

Suggested citation

Easton K. Complementary medicines: attitudes and information needs of consumers and healthcare professionals – prepared for the National Prescribing Service Limited (NPS). July 2007. Sydney: NPS, 2007.

Acknowledgements

This report was prepared by Dr Kylie Easton an Independent Consultant.

The author would like to acknowledge the contributions made by the following National Prescribing Service staff:

- Nicole Cockayne and Alice Bhasale for developing the search strategy and reviewing articles for inclusion in the final dataset
- David Burt for implementing the search strategy along with the collection of reference materials for this report
- Adi Smith for conducting supplementary searches
- Margaret Williamson and Paul Hemsworth for their editorial input.

In addition, the author would also like to thank Dr Susan Whicker, a Health Policy Consultant, for reviewing the report.

Table of contents

Executive summary	5
Introduction	7
Regulation of complementary medicines in Australia	7
About this report.....	9
Aims of this literature review	9
Definition of complementary medicines	10
Literature search	10
Synthesis of the literature	10
Consumers and complementary medicines	13
Use of complementary medicines by consumers	13
Summary.....	13
Complementary medicines commonly used by consumers.....	14
Summary.....	15
Health conditions for which consumers use complementary medicines.....	16
Expected health outcomes achieved	17
Summary.....	18
Factors reported to influence the use of complementary medicines by consumers	18
Summary.....	19
Attitudes of consumers towards the efficacy and safety of complementary medicines	19
Summary.....	21
Self-initiation of complementary medicines and communication of use with healthcare professionals	21
Summary.....	22
Healthcare professionals and complementary medicines.....	23
Attitudes of doctors towards complementary medicines.....	23
Summary.....	25
Recommendation of complementary medicines by doctors	25
Summary.....	27
Attitudes of nurses towards complementary medicines.....	27
Summary.....	29
Recommendation of complementary medicines by nurses	29
Summary.....	31
Attitudes of pharmacists towards complementary medicines	31
Summary.....	31
Recommendation of complementary medicines by pharmacists.....	32
Summary.....	32

Attitudes of other healthcare professionals towards complementary medicines	32
Summary.....	33
Information on complementary medicines	35
Information sources used to aid decision making on complementary medicines	35
Consumers.....	35
Healthcare professionals	36
Summary.....	38
Accessibility and quality of complementary medicines information	38
Media	38
Accessibility of complementary medicines information in the media	38
Quality of complementary medicines information in the media.....	38
Summary	39
Journals	39
Accessibility of complementary medicines information in journals.....	39
Quality of complementary medicines information in journals	40
Summary	40
Internet.....	41
Accessibility of complementary medicines information on the Internet.....	41
Quality of complementary medicines information on the Internet	41
Summary	43
Books and compendia	43
Accessibility of complementary medicines information in books and compendia.....	43
Quality of complementary medicines information in books and compendia	43
Summary	44
Tools for assessing the quality of complementary medicines information.....	44
Summary.....	46
What are consumers' and healthcare professionals' information needs for complementary medicines?	46
Summary.....	48
How should information on complementary medicines be conveyed?	49
Strategies to convey information on complementary medicines	50
Effectiveness of strategies in influencing behaviour.....	51
Summary.....	51
Information sources currently available to assist in the development of complementary medicines information	51
Journals	51
Databases and web sites.....	53
Books and Compendia.....	56
Appendix I	59
Appendix II	61
Appendix III.....	63
References	65

Executive summary

This literature review was commissioned by the National Prescribing Service Limited. Four key areas were addressed:

- consumer and healthcare professionals' attitudes towards complementary medicines
- current consumer and healthcare professionals' practice and preference for using/recommending complementary medicines
- current consumer and healthcare professionals' practice and preference for obtaining information on complementary medicines
- information needs of consumers and healthcare professionals regarding complementary medicines.

Complementary medicine use was found to be common among Australian consumers. Half of the South Australian population used these products in 2004, and, extrapolating nationally, it was estimated that Australians spent \$1.31 billion on complementary medicines. Self-prescribed vitamins, herbal medicines and mineral supplements were the most common complementary medicines used.

Promotion of general health and prevention of illness were the primary reasons reported for using complementary medicines. In addition, consistent with the diversity of products available, a wide range of symptoms were treated with complementary medicines.

Consumers have different expectations of complementary medicines compared with conventional medicine. This is evident from consumers expressing satisfaction with complementary medicines despite their expectations generally exceeding the health outcomes achieved. The different expectations placed on complementary medicines may be the result of a perception of greater safety. However, such a perception may come from a limited knowledge of the potential risks. As most complementary medicine use is self-prescribed by consumers, such gaps in knowledge may result in suboptimal use.

Inadequate communication between consumers and healthcare professionals about complementary medicines is evident in the literature. Consumer attitudes towards these products, along with a belief that healthcare professionals will disapprove of use, contribute to poor disclosure rates. Conversely, healthcare professionals often underestimate use of complementary medicines and are rarely proactive in enquiring about these products.

Limited data suggests that attitudes towards complementary medicines may vary between healthcare professions. Overall, doctor's attitudes towards complementary and alternative therapies were found to be positive; acupuncture, hypnosis and meditation appear to have high acceptance. In contrast, complementary medicines are less accepted with doctors less confident of efficacy and safety. This is reflected in lower rates of referral to practitioners of complementary medicine.

Positive attitudes towards complementary and alternative medicines are also reported for nurses, with acceptance of such therapies often higher than that reported by their medical colleagues.

Limited literature indicates pharmacists generally hold positive attitudes towards complementary medicines, considering them useful and safe. However, the data also suggests that many pharmacists question the effectiveness of these products. While pharmacists do recommend complementary medicines, such recommendations appear to be influenced by consumer demand.

A variety of complementary medicine information sources were used by healthcare professionals including: books, magazines/trade journals, professional journals, the Internet, and continuing professional education seminars. In contrast, family or friends and the media

were the information sources used most commonly by consumers; highlighting the consumer-driven nature of complementary medicine usage.

As can be gleaned from the activities of consumers and healthcare professionals, complementary medicine information is accessible via a wide range of sources: media, journals, Internet, and books. Despite the abundance of information available from these sources, research assessing the quality of information provided is limited. Such deficiencies are particularly evident for information from the media (i.e. newspapers, radio and television). Available research overwhelmingly suggests that the quality of complementary medicine information from all sources is highly variable.

Given the highly variable quality of complementary medicine information, the ideal would be to empower consumers and healthcare professionals to evaluate available information. Tools and techniques have been designed for this purpose however, uncertainty exists about the ability of such tools to alert users to potentially harmful information. Thus it has been suggested that only known, authoritative providers of information be used. This seems to be applicable to all sources of information reviewed on complementary medicines.

Consumers and healthcare professionals report that they need information on the contents of complementary medicines, indication for use, therapeutics, efficacy, dosage, adverse effects, interactions, general safety, use in special populations and storage. Multiple strategies have been suggested to convey this information. Key to all such strategies, and the optimal use of complementary medicines, is the dissemination of high quality information.

Introduction

Throughout the western world, the health care environment is changing rapidly and the past decade has seen increasing attention given to complementary medicines.¹ In Australia this is evidenced by the widespread use of complementary medicines by consumers. Half of the South Australian population used these products in 2004 and, extrapolating nationally, it was estimated that Australians spent \$1.31 billion on complementary medicines.² Further, Australians consume as much non-traditional medicine, vitamin and mineral supplements as prescription drugs.³

The past decade has also seen an increase in attention given to complementary medicines at a federal level, with the establishment of the Office for Complementary Medicines in the Therapeutic Goods Administration in 1999.^{4,5} The Office for Complementary Medicines was created to focus exclusively on the regulation of complementary medicines.^{6,7} As a result Australia is one of a handful of countries in the world that regulates these products.⁷

Regulation of complementary medicines in Australia

Complementary medicines may be listed on the Australian Register of Therapeutic Goods (ARTG) as Registered or Listed medicines.⁸ Therapeutic goods that are assessed to be of higher risk are individually evaluated for safety, quality and efficacy before they are released onto the market.⁴ Higher-risk products approved by the Therapeutic Goods Administration are included in ARTG as Registered medicines and carry an identifying 'AUST R' number on their label to signify this.⁴ Registered medicines may be non-prescription, over-the-counter medicines or medicines available only on prescription from a medical practitioner or other authorised prescriber registered under the laws of a State or Territory.⁸

A different assessment process is applied to lower risk products.⁴ These products are not individually evaluated for safety, quality and efficacy by the Therapeutic Goods Administration before being released onto the market.⁴ Instead, the substances from which they are formulated undergo premarket evaluation for safety and quality, and products may only be formulated from these approved substances.⁴ Lower-risk products approved by the Therapeutic Goods Administration are included in ARTG as Listed medicines and carry an identifying 'AUST L' number. Claims for the symptomatic relief of conditions (other than serious diseases/disorders), health maintenance and health enhancement, and risk reduction are permitted on listable products.⁴ If a sponsor intends a product to carry a claim that it will 'cure, manage, treat or prevent' a disease or disorder, the product is required to undergo registration.⁴ Most, but not all, complementary medicines included on the ARTG are Listed medicines.⁸

Regulations controlling the supply of complementary medicines mean that Australian consumers are largely protected from the problems of contamination by poisons or active drugs that are reported in many other countries.^{4,9} However, in April 2003, the Therapeutic Goods Administration initiated the recall of more than 1 600 complementary medicines from the Australian marketplace.⁶ The recall was a result of the failure of one medicine manufacturer, Pan Pharmaceuticals Limited, to maintain appropriate manufacturing and quality control standards.⁶

In order to reassure the public and maintain confidence in Australia's reputation as a supplier of high quality and safe medicines, the Expert Committee on Complementary Medicines in the Health System was convened.⁶ The Committee was asked to consider the regulatory, health system and industry structures necessary to ensure that the objectives of Australia's National Medicines Policy were met in relation to complementary medicines.⁶ The Committee's report *Complementary Medicines in the Australian Health System* examined the role of complementary medicines in the Australian health system and made 49 recommendations.⁶

The report raised a number of concerns related to the information and skills needs of healthcare providers and consumers regarding complementary medicines, and highlighted the need for further research in this area.

About this report

Aims of this literature review

This review was commissioned by the National Prescribing Service Limited (NPS) in response to the call for a greater understanding of the information needs and preferences of consumers and health professionals about complementary medicines.

The purpose of this review will be to explore:

- consumer and healthcare professionals' attitudes towards complementary medicines
- current consumer and healthcare professionals' practice and preference for using/recommending complementary medicines
- current consumer and healthcare professionals' practice and preference for obtaining information on complementary medicines
- information needs of consumers and healthcare professionals regarding complementary medicines.

The specific questions to be addressed as part of the review are detailed below:

- What are the attitudes of consumers and healthcare professionals to complementary medicines? For example, do they value them, do they think they are effective, do they consider side effects, drug interactions and contraindications in their decision making?
- What complementary medicines are consumers using?
- What drives consumers to use complementary medicines, or healthcare professionals to recommend or prescribe complementary medicines? For example, is it to prevent disease, to treat symptoms, or to alleviate side effects? What are the desired health outcomes?
- When are complementary medicines self initiated? When are they prescribed or recommended by another person?
- What information sources do consumers and healthcare professionals use to aid decision making on using or prescribing/recommending complementary medicines? What is the evidence base for these information sources?
- What are the consumer and healthcare professional needs of complementary medicines? For example, is it comparative data, efficacy data, information on effectiveness or safety?
- What information on complementary medicines is currently available? Is the information that is available in the most appropriate format? Is it available in a timely and accessible fashion? How should such information be conveyed?
- Are consumers and healthcare professionals communicating adequately with each other about the use of complementary medicines?
- Are there any gaps in consumer and healthcare professional skills in assessing information on complementary medicines?
- Is it possible to identify from the literature what is required or needed for influencing skills and behaviour amongst consumers and healthcare professionals?

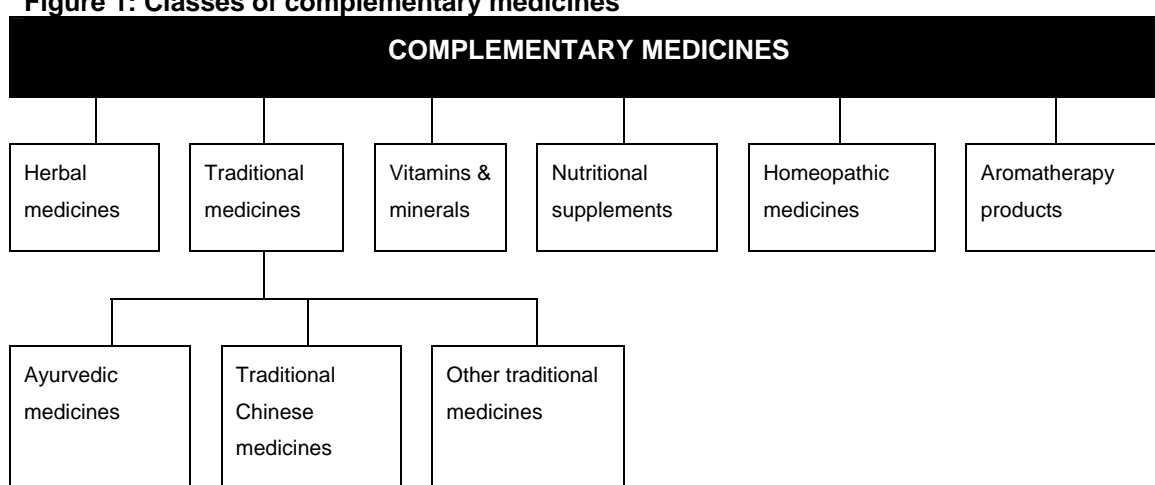
Definition of complementary medicines

For the purposes of this review, NPS has adopted the regulatory definition of complementary medicines used in Australia. This definition is as follows:

A complementary medicine is defined as a therapeutic good consisting wholly or principally of one or more designated active ingredients each of which has a clearly established identity and a traditional use. Traditional use means use of the designated active ingredient that is well documented, or otherwise established, according to the accumulated experience of many traditional healthcare practitioners over an extended period; and accords with well-established procedures of preparation, application and dosage.⁸

Examples of complementary medicines (Figure 1) may therefore include herbal medicines, vitamin and mineral supplements, other nutritional supplements, traditional medicines such as Ayurvedic medicines and traditional Chinese medicines, homeopathic medicines, and aromatherapy oils (where they make therapeutic claims).⁶

Figure 1: Classes of complementary medicines⁶



Literature search

The literature search for this project was undertaken by NPS between 6 February 2006 and 11 February 2006. The search focused on literature since 1997 and involved the following databases:

- MEDLINE
- MEDLINE (In-Progress & Other Non-indexed Citations)
- EMBASE
- CINAHL
- AUSTHealth (INFORMIT).

The search strategies used for each database can be found in Appendix I. NPS identified approximately 3000 articles using the search strategy. A manual assessment of the relevance of each abstract or article was undertaken by NPS to reduce the number of articles. Of the 559 articles in the final dataset, 518 were retrievable and were reviewed for this report.

Synthesis of the literature

Studies using qualitative methods such as questionnaires, interviews and focus groups form the majority of literature reviewed. Of these methods, the survey research approach was dominant. Reference to pilot testing of questionnaires or assessments of the validity and reliability of the instruments in these studies was infrequent. Similarly, sample size calculations were rarely mentioned, so too was whether adjustments were made to account

for differences between respondents and the general population. No study quality criteria were used to assess all the studies, however where such criteria may be relevant, such as response rate or small sample size, this is included in the review.

A uniform definition for complementary medicines does not exist across the literature. Most research refers to 'complementary and alternative medicines' (CAM).¹⁰ A wide range of therapies (e.g. acupuncture, massage, herbal medicines) are included under this heading. The World Health Organization defines CAM as a broad set of health care practices that are not part of a country's own tradition and not integrated into the dominant health care system.¹¹

The Australian regulatory definition of complementary medicines is encompassed by the broader concept of CAM in most of the research. Studies clearly indicating that complementary medicines were incorporated in this manner are used in this review. However, where this occurred the term CAM is used instead of complementary medicines, with individual complementary medicine therapies reported separately where appropriate.

Along with variations in methods and definitions used, differences in populations surveyed limit the ability to compare studies. Variations in complementary medicine use is evident between countries even when there is no obvious cultural difference.^{10,12} For example, in contrast to Australia, homeopathy appears well accepted by doctors in the United Kingdom.¹⁰ Because of this and the importance of understanding the information needs and preferences of the Australian population, Australian data is presented whenever available.

Taking into account these methodological issues and according to their relevance, studies were assigned to one or more of the questions that the review aimed to answer. This report will therefore review the literature identified for the review questions and will be divided into three sections:

- consumers and complementary medicines
- healthcare professionals and complementary medicines
- information on complementary medicines.

Consumers and complementary medicines

Use of complementary medicines by consumers

The level of complementary medicine use among Australian consumers has received significant attention, with surveys conducted in a wide variety of subpopulations.^{2,13-15}

Levels of complementary medicine use have been explored in Australian surveys focusing on women¹⁶, older people^{17,18}, and those with specific conditions such as diabetes¹⁹, HIV/AIDS²⁰ and cancer^{21,22}. In addition, patterns of use among Australians attending emergency departments^{13,23} or admitted to hospital^{14,15,24-26} have been reviewed. While such studies have reported on the level of use in specific populations, variations in demographics and methodology make reliable estimates of prevalence difficult.

Due to their methodological rigour, the surveys conducted by MacLennan et al are argued to have produced the most reliable Australian prevalence figures.²⁷ Three studies have been undertaken by MacLennan et al using data collected during the 1993, 2000 and 2004 South Australian Health Omnibus Surveys (SAHOS).^{2,7,28} The SAHOS is an annual representative population survey in which interviews are conducted in respondents' homes. Participants were asked if they had used any complementary medicines over the past year, with seven main types listed on a prompt card with samples (herbal medicines, vitamins, mineral supplements, Chinese medicines, homeopathic medicines, soy products, aromatherapy oils, other or none).²

In total, 3 015 interviews were conducted in the 2004 SAHOS (72% participation rate).² Just over half (52%) of the sample said that they had used complementary medicines over the past year. A finding consistent with the previous two surveys (49% in 1993, and 52% in 2000).^{2,7,28} Use was found to be greatest in women, individuals with post-secondary school education, in the 25–44 year age bracket and those with a household income over \$30 000.² This profile is consistent with previous years and many international studies on complementary medicine use.^{2,7,28-33} Lower use was reported for those over 65 years, separated or divorced, with no post-secondary school education and those who lived in a household with incomes totalling less than \$30 000.²

Those using complementary medicines in the 2004 SAHOS reported that they spent an average of \$21.23 per month on products (range \$1 to \$650 per month).² Extrapolating to a national level, it is estimated that Australians spent \$1.31 billion on complementary medicines in 2004.² This figure is down from the \$1.67 billion reported in the 2000 SAHOS.³¹ The authors suggest that this was due to complementary medicine users in 2004 using fewer products per person than in 2000.² A finding possibly influenced by the adverse publicity surrounding the 2003 Pan Pharmaceutical recall in which a substantial quantity of complementary medicine products were removed from retail outlets.²

Summary

Complementary medicine use among Australian consumers is common, with research estimating that half of the South Australian population used these products in 2004. Use appears greatest among women aged 25–44 years, with higher income and education levels. Nationally it is estimated that \$1.31 billion was spent on complementary medicines in 2004.

Complementary medicines commonly used by consumers

Self-prescribed vitamins (39%), followed by herbal medicines (21%) and mineral supplements (14%) were the most commonly used complementary medicines in the 2004 SAHOS.² This is consistent with findings reported in other Australian surveys.^{14,15,18,24,25,34} Chinese medicines (2%), and homeopathic medicines (2%) were found to be the least common complementary medicines used in the 2004 SAHOS.²

Australian surveys that state the complementary medicines commonly used in the patient population investigated are listed in Table 1. The complementary medicines reported as commonly used in more than two studies were: garlic (alone or in combination), multivitamins, vitamin C, echinacea, vitamin B, ginkgo biloba, vitamin E, fish oil, evening primrose oil, chamomile, glucosamine and calcium.

Table 1: Complementary medicines commonly used (Australian surveys)

Setting	Number of participants	Reported complementary medicines commonly used	
Paediatric patients ²⁶	n = 503	echinacea multivitamins/minerals vitamin C	
Paediatric asthma ³⁵	n = 174	echinacea <i>Ginkgo biloba</i> horseradish	multivitamins vitamin C zinc
Inpatients ²⁴	n = 511	calcium echinacea evening primrose oil garlic (with horseradish)	multivitamins vitamin C vitamin E
Emergency department attendees ²³	n = 326	aloe vera chamomile evening primrose oil	garlic ginseng topical or inhaled tea tree oil preparations
Emergency department attendees ¹³	n = 404	acidophilus amino acids celery chamomile Chinese herbs cranberry dandelion echinacea evening primrose oil fish oil garlic ginger ginkgo	ginseng glucosamine Greek Mt tea green tea guarana horseradish liquorice parsley peppermint tea royal jelly seaweed St John's wort valerian
Psychiatry patients ³⁴	n = 52	aloe vera antioxidants chamomile tea fish oils folic acid garlic (with horseradish)	<i>Ginkgo biloba</i> thiamine vitamin B vitamin C vitamin E zinc

Table 1: Complementary medicines commonly used (Australian surveys) (continued)

Setting	Number of participants	Reported complementary medicines commonly used	
Rural community ³⁶	n = 300	B group vitamins echinacea garlic	multivitamins vitamin C
Older people ¹⁷	n = 402	B group vitamins calcium cod liver oil folate garlic and combination products	<i>Ginkgo biloba</i> multivitamins vitamin C vitamin E zinc
Older people ¹⁸	n = 1 082	cod liver oil fish oil garlic (and in combination) <i>Ginkgo</i> glucosamine	multivitamins/minerals potassium chloride slippery elm vitamin E
University students ³⁷	n = 271	B group vitamins echinacea garlic	iron multivitamins vitamin C
Prostate cancer ²²	n = 111	epilobium saw palmetto	selenium trinovin
Menopause ³⁸	n = 100	black cohosh dong quai red clover	soya products vitex
Diabetes ¹⁹	n = 351	calcium chromium garlic <i>Ginkgo biloba</i> glucosamine	multivitamins omega-3 fatty acids/fish oil vitamin B vitamin C vitamin E
Depression & Anxiety ³⁹	n = 7 485	Anxiety-eze B group vitamins bach flower remedies kava	magnesium marijuana St John's wort valerian

Summary

Self-prescribed vitamins, followed by herbal medicines and mineral supplements are the most common complementary medicines used by Australian consumers.

Health conditions for which consumers use complementary medicines

Complementary medicines are a diverse range of products with a wide range of reported uses. It is thus not surprising that a survey investigating the use of 13 herbs by 376 consumers in Minnesota (USA) reported that they were used for a multitude of purposes.⁴⁰ However, in a theme consistent with many other studies, the most frequent use reported for 5 of the herbs was to promote general health and well being.

A desire to promote general health was the main reason given for using complementary medicines in the 2004 SAHOS.² Of the 1 574 complementary medicine users, 70% reported 'general health' as the main reason for using these products. Similar findings were reported in a survey of consumers in the USA.⁴¹ Potential respondents were approached in grocery store parking lots, with 326 people completing the survey. Of the 131 respondents who used herbal medicines, the most common reason for use was a desire to improve general health. Additional surveys indicate general health is a primary motive with respondents reporting using complementary medicines to 'stay healthy', or to make them 'feel better'.^{15,23,42}

Prevention of illness also fits with the concept of promoting general health. This was found to be a primary factor driving the use of alternative medicines in the 2000 SAHOS.⁷ Of the complementary medicines commonly used by 52% of the 3 027 respondents, over a third (35%) used them to prevent sickness. These findings are similar to those reported in a survey of complementary medicine use by patients treated in a South Australian psychiatry unit.³⁴ Most (52%) of the 52 participants recruited from the unit indicated that they had used complementary medicines in the past 6 months.³⁴ The authors reported that these items were taken as supplements for the prevention of colds or cancer, or to improve general health and well being.

The above research indicates that many consumers use complementary medicines to promote general health and prevent illness rather than treat a specific ailment. However, complementary medicines are also used for treatment. Treatment of sickness was reported as the primary reason for using complementary medicines by 18% of users in the 2000 SAHOS.⁷ This was the third most common reason provided, the first being prevention of sickness (35%) and the second a combination of treating and preventing sickness (31%).

Consistent with the diversity of complementary medicines, users report they treat a wide variety of conditions with these products. This was highlighted in a survey of 503 paediatric inpatients in Victoria.²⁶ Complementary medicines had been used in the year before admission by 43% of inpatients interviewed. Although the primary reason for use was to promote general health (30%), 14% used these products to treat cold/coughs/flu symptoms, 9% for eczema/skin conditions, 7% for gastrointestinal symptoms, 7% for relaxation/sleep, 6% for asthma/respiratory symptoms and 6% for musculoskeletal symptoms. The wide range of conditions reported agrees with the findings of the 2004 SAHOS.² Almost all body systems were involved in the reasons given for using complementary medicines. For example: 21% used complementary medicines for muscles, bones or joints; 13% for nerves or stress; 8% for PMS/menopause; and 6% for lung or sinuses. Reasons for use were also found to differ with age, with the use of such products for 'blood or circulation' and 'muscles, bones or joints' increasing with age, whereas use for the 'immune system' decreased with age.

The literature also indicates that symptoms of specific disease states or conditions are treated with complementary medicines.⁴³⁻⁴⁶ For example, children diagnosed with attention deficit hyperactivity disorder attending an outpatient's clinic in Victoria were found to commonly use CAM, with 68% of the 75 families surveyed reporting use.⁴⁵ Families were asked to rate 12 factors according to their importance in making a decision to use CAM. The desire to minimise symptoms of attention deficit hyperactivity disorder was rated as 'important' or 'very

important' by the highest proportion of families (89%). Similarly, a survey of 1 500 menopausal women in Queensland also found that the treatment of symptoms was a common reason for the use of complementary medicines.⁴⁴ Of the 886 respondents, women who had experienced vasomotor symptoms were significantly more likely to have used herbal medicines (Odds ratio [OR] = 1.16 [1.04 to 1.29] p = 0.009) or phytoestrogens (OR = 1.14 [1.01 to 1.27] p = 0.030).

Treatment of symptoms has also been reported as a reason for use of complementary medicines in patients with cancer.^{43,46} Qualitative interviews with 39 Queensland patients with advanced cancer reported 'relieving' symptoms as one of the four main reasons for use.⁴⁶ Fatigue, pain and lack of appetite were all symptoms for which patients reported using CAM. In addition, interviewees indicated that they used CAM to relieve adverse effects associated with conventional cancer treatments.

The use of complementary medicines to relieve adverse effects associated with conventional medicine was reported in a number of studies identified in this review, with the vast majority focusing on use in cancer.^{43,46-49} A survey distributed to 1 108 patients diagnosed with prostate cancer in Canada was one of these studies.⁴³ Of the 451 respondents, 30% indicated that they had used CAM since their diagnosis. Controlling the adverse effects related to medical treatment was listed as the reason for using CAM by 10% of users. Focus groups with 29 Canadian men diagnosed with prostate cancer also identified this theme.⁴⁷ The authors reported that participants chose conventional treatment for their prostate cancer but were 'pushed' towards CAM to help them cope with the adverse effects associated with these treatments.

It is of interest that most patients with cancer using complementary medicines were not using them to 'cure' the disease.^{43,50,51} Only 21% of CAM users reported 'to cure disease' as the reason for use in the above survey of Canadian patients with prostate cancer.⁴³ Instead, the most common reason for use reported involved increasing the body's ability to fight the disease by 'boosting the immune system' (38%). Similar trends were evident in a number of other surveys of complementary medicine use in cancer.^{46,49,50}

Expected health outcomes achieved

The diverse reasons reported for use of complementary medicines correlates with an expectation for them to achieve a wide range of health outcomes. A number of surveys have explored whether consumers believed that their expected health outcomes had been achieved.^{43,50-53}

The authors of a survey of 1 754 university students in the United States reported that students expectations of herbal medicine generally exceeded the outcomes.⁵³ General health improvements were the expectations of use for 461 students using herbal medicine, 63% of this group reported they actually experienced such an outcome. Likewise, of 132 students who expected to achieve greater emotional stability only 64% felt they achieved this goal. However, of the 413 students who expected their symptoms to improve the vast majority (93%) reported they actually experienced such an outcome.

The proportion of respondents indicating expected health outcomes had been achieved was much lower in a survey of CAM use in 6 607 Japanese patients with cancer.⁵² Of 3 461 respondents, 43% indicated they used products such as mushrooms, herbs and shark cartilage. Suppression of tumour growth (67%), cure of disease (45%), symptom relief (27%) and complementary effects to conventional treatment (21%) were the primary health outcomes expected by users. Positive outcomes such as tumour shrinkage, inhibition of tumour growth and pain relief were reported by 24% of CAM users, the remainder were uncertain whether these products had achieved their expected outcomes.

Discrepancies between reported health outcomes and expectations were also noted in a survey of Israeli patients with cancer.⁵⁰ Of the 111 participants, 36 reported that they used CAM. Although the primary reason given for use was to increase the body's ability to fight the cancer, only 31% of patients reported that they felt CAM to be effective in doing so. Likewise only 40% reported finding CAM to be beneficial in counteracting ill effects of the disease, although it was cited as one of the main reasons for use. Despite these findings the mean satisfaction score for CAM use was 5.36 (standard deviation = 1.37), with a score of 7 representing the highest level of satisfaction. Hence, patients rated their satisfaction with the use of CAM as high, even if they did not always see an obvious benefit.

Summary

Promotion of general health and prevention of illness are the primary reasons reported for using complementary medicines. Consumers less commonly use complementary medicines for treatment. Consistent with the diverse range of products available, a wide range of symptoms are treated with complementary medicines. Consumers with serious disease states where conventional treatments are commonly associated with adverse effects also use complementary medicines to alleviate such effects.

Consumer expectations of complementary medicines are reported to generally exceed the health outcomes. Despite this, consumers still indicate high levels of satisfaction with complementary medicines. Additional factors may therefore be influencing the use of complementary medicines by consumers.

Factors reported to influence the use of complementary medicines by consumers

It is clear that consumers use complementary medicines for a wide range of health conditions. Numerous factors have been suggested to influence the reasons consumers choose to use complementary medicines.^{30,54} However, three main themes are evident: dissatisfaction with conventional medicine, dissatisfaction with doctor–patient relationship, and holding a particular set of values or beliefs often referred to as ‘postmodern values’.⁵⁵

Dissatisfaction with conventional medicine or the doctor–patient relationship have also been labelled ‘push factors’.⁴⁷ That is, factors or experiences that make consumers more likely to seek other options.⁴⁷ Such experiences include conventional medicines inability to cure their ailment or doctors not spending enough time with consumers in consultations.⁵⁶ While there is some evidence in support of these explanations^{16,30}, a number of studies indicate that they are not the primary factor influencing the use of complementary medicines.⁵⁶⁻⁵⁸

Two Australian studies examined the relative importance of dissatisfaction with the medical outcome, dissatisfaction with the medical encounter and ‘postmodern values’ as reasons influencing CAM use.^{56,57} Telephone interviews were conducted and participants were asked to indicate their level of agreement with a series of attitudinal statements. In both studies, multivariate analysis indicated that the emergence of ‘postmodern values’ provides the best explanation for consumers use of complementary medicines.

Postmodern values are often described as the emergence of a new set of beliefs about nature, science, holistic medicine, rejection of authority, individual responsibility and consumerism.^{55,59} In this theory, the postmodern attitude views nature as gentle, caring and safe.⁵⁹ The literature indicates that consumers appear to value the concept of a ‘natural’ product.^{35,38,41,60} In a study of consumers in the USA, the most commonly cited benefit given by the 131 users of herbal medicine was that ‘herbals are natural’ (26%).⁴¹ Additional perceived benefits included ‘fewer adverse effects than conventional medicines’ (22%), ‘herbals are safe’ (22%) and ‘herbals clear out of your body well’ (11%).

In contrast with this view of nature as benevolent, science is put forward as being potentially harmful.⁵⁹ That is, science and technology may be considered to be tampering with and transforming nature.⁵⁹ However, telephone interviews conducted with 209 adults in Albury–Wodonga reported that consumers did not necessarily subscribe to this view.⁵⁹ When asked to respond to a series of attitudinal questions, the vast majority of respondents agreed that science provides a better way of life and that scientific developments have been effective in curing diseases.

Consumers with postmodern values may express a greater desire for holistic medicine.⁵⁴ An approach that emphasises health as being multifaceted, involving an integration of body, mind and spirit.⁵⁹ Qualitative interviews with 17 consumers who had used both CAM and conventional medicine in the past year, along with 20 CAM practitioners, reported that holism was one of main reasons for utilising CAM.⁶¹ Patients said they preferred to be treated as ‘whole people’ rather than as composites of numerous biomechanical attributes.⁶¹

It is argued that rejection of authority, especially scientific and professional authority, and demand for participation are also aspects of a postmodern value system.⁵⁹ Almost all of the adults interviewed in Albury–Wodonga believed that patients should have input and participate in the process of healing.⁵⁹ In addition to participating, surveys of cancer patients have reported complementary medicine use to be associated with a desire for greater control over the treatment process.⁶²⁻⁶⁴ However, this desire for control is not a consistent predictor of use.^{21,22}

Another characteristic of postmodernism is a belief in individual responsibility.⁵⁹ This involves consumers believing that responsibility for good health rests with the individual and that they should be proactive in achieving this goal.⁵⁹ Such beliefs may be in evidence in consumers apparent willingness to use complementary medicines for general health and disease prevention. This also correlates with suggestions that consumers may view complementary medicines as addressing the cause and prevention of disease (proactive) while conventional medicines may be viewed as attempting to eliminate the disease (reactive).⁶⁵

Consumerism is considered another emerging value.⁵⁹ It has been suggested that people are more readily inclined to change their consumption patterns and search for more satisfactory options.⁵⁹ This may influence motivations for use of both complementary and conventional medicines. Responses provided in a survey of complementary medicine use by paediatric patients with asthma illustrate this point.³⁵ One of the key reasons given for deciding to use complementary medicines was “better to try something else than rely on conventional medicine all the time”.

Summary

It is suggested that the emergence of postmodern values provides the best explanation of consumers’ interest in complementary medicines. The literature provides varying levels of support for this theory which involves the surfacing of a new set of beliefs about nature, science, holistic medicine, rejection of authority, individual responsibility and consumerism. While each of these beliefs may influence complementary medicine use to varying degrees, appropriate use may be influenced by attitudes towards efficacy and safety.

Attitudes of consumers towards the efficacy and safety of complementary medicines

A plethora of surveys investigating the level of complementary medicine use by consumers are available.^{2,13-15} Despite its comparative importance, to date the research undertaken has largely ignored the attitudes of consumers towards the efficacy and safety of complementary medicines.¹⁰ As these products are readily available, such attitudes may influence optimal use.

Consumer attitudes towards the efficacy of complementary medicines vary. Positive attitudes were reported by 220 respondents to a survey of pregnant women attending a hospital antenatal clinic in South Australia.⁵⁵ Most respondents (77%) who had used herbal medicine during their pregnancy, considered the product(s) effective. Similar findings were reported in a survey of consumers in the USA.⁴¹ Herbal medicines were used by 40% of 326 responders recruited from three grocery store parking lots. Nearly all respondents who reported using herbal medicines (86%) believed that the product was 'helpful' or 'very helpful' in treating their ailment(s). Contrasting results were reported by 376 respondents to another survey (also in the USA) on the use of 13 herbal preparations by consumers.⁴⁰ Most respondents (61%) reported they had used one or more of the 13 herbs in the past year. Despite the high rate of use, for 11 of the 13 herbs, less than 60% of those who used the herb rated it as 'effective' or 'very effective'.

Irrespective of attitudes towards efficacy, an Australian survey of paediatric patients with asthma found a high level of satisfaction with complementary medicines.³⁵ The survey population included 187 consecutive paediatric patients with known asthma attending or admitted to the Royal North Shore Hospital, Sydney. Of the 174 respondents, 83% thought that conventional medicines were effective and 61% were satisfied with their actions. In contrast, only 12% of respondents who used complementary medicines thought they were effective, but 52% of these were satisfied with this. The authors concluded that respondents did not have the same perceptions or expectations of complementary medicines that they had for conventional medicines.

Data collected on 3 027 respondents during the 2000 SAHOS indicates that consumers may indeed have different perceptions and expectations of complementary medicines.⁷ Respondents were asked 'do you think that alternative medicines are or should be shown to work and be safe to the same level as prescribed medicines?' Almost a third of respondents reported that this was either 'not required' (13%) or was required for only 'some' (21%) of the medicines. These findings indicate that along with differences in efficacy expectations, attitudes towards the safety of complementary medicines may also contrast those of conventional medicines.

Attitudes towards the safety of herbal medicines were obtained in a survey of 338 patients presenting to the Royal North Shore Emergency Department.²³ Of the 325 respondents, 42% considered herbal medicines to be safer than conventional pharmaceuticals. These findings agree with those reported in a survey of patients attending a hospital in Germany.⁶⁶ Attitudes towards CAM and conventional medicine were assessed by asking the 435 participants to respond to a series of statements using a 5 point scale (1 = is not true; 3 = indifferent; 5 = exactly true). The highest level of agreement was reported for the statement 'I believe, that CAM has less side effects than therapies of the conventional medicine' (mean score = 3.9, standard deviation = 1.4).

Not all surveys indicate that attitudes towards the safety of complementary medicines are different to those of conventional medicines. Only 13% of respondents to a survey of consumers in the Riverina District of New South Wales felt that CAM was safer than conventional medicine (n = 300).³⁶ However, as the broader concept of CAM was considered in the survey, this finding may be influenced by respondents not wishing to classify all CAM therapies as safe. Respondents to the 2000 SAHOS were reluctant to classify all complementary medicines as safe to use.⁷ Instead, just over half (56%) indicated that 'some' were safe. Only 22% of respondents indicated that 'all' were safe.

Positive attitudes towards the safety of complementary medicines are also highlighted by research indicating consumer's willingness to use them in conjunction with conventional medicines. Of 1 240 respondents using complementary medicines, but not on their doctors advice, in the 2000 SAHOS, 30% used them along with conventional medicines to treat the

same conditions.⁷ Most of this use (57%) was without the knowledge of their general practitioner. More recently, the 2004 SAHOS reported that half (50%) of the 1 574 respondents who had used complementary medicines had taken them on the same day as conventional medicines.² Support for this approach was shown in a survey of 1 578 women in Wollongong.⁶⁷ Of the 492 respondents, 79% agreed 'that complementary medicines can be used in conjunction with conventional medicine'.

The literature indicates generally positive attitudes towards the safety of complementary medicines. However, a survey completed by 169 health fair visitors in the USA indicates that these positive attitudes may not depend on knowledge levels.⁶⁸ Participant's knowledge scores were obtained for five commonly used herbal products by assigning one point for each correctly identified purpose, potential side effect or interaction. Respondents appeared to be slightly more familiar with purposes of the products than with side effects or interactions. The median number of correctly identified purposes for all products was 2 out of a possible 18 correct selections. In contrast, the median score for correctly identified side effects and interactions was zero, with more than half of the respondents unable to identify a side effect or interaction for any of the five herbal products. This is despite 39% of respondents reporting that they had used at least one of the products.

Positive attitudes towards safety may also be supported by an erroneous belief that CAM products are independently tested by a government agency such as the Therapeutic Goods Administration.² In the 2004 SAHOS, 49% of the 3 015 interviewees thought that complementary medicines were tested in this way with 75% believing that they were tested for quality and safety.²

Summary

Although many consumers believe complementary medicines to be effective, doubts about efficacy do not necessarily correlate with dissatisfaction with use. This may be because consumers have different expectations and perceptions of complementary versus conventional medicines, part of which involves a perception of greater safety. However, such perceptions appear to be based on limited knowledge of potential risks involved with complementary medicines. If consumers are self-initiating complementary medicines in this context, suboptimal use may be the result.

Self-initiation of complementary medicines and communication of use with healthcare professionals

A steady increase in use of CAM therapists over the preceding 10 years was reported in the 2004 SAHOS.² Despite this increase, the literature indicates that most complementary medicines are self-initiated by consumers.²³⁻²⁵

A survey of herbal medicine use by patients presenting to the Royal North Shore Hospital (Sydney) Emergency Department illustrates the level of self-initiation of complementary medicines.²³ Of the 325 respondents, 52% had used herbal medicines in the 12 months prior to attendance. Of these, 41% of herbal medicines were reported to have been self-prescribed, 36% were recommended by a friend or family member, 9.0% by naturopaths, 5.0% by qualified medical practitioners and 3% by other CAM practitioners. Higher levels of self-initiated use have also been reported.²³ Of 1 102 preoperative patients attending two Victorian hospitals 14% had taken a herbal product in the six weeks prior to admission with 63% of these self-prescribed.²³

Given the ready availability of complementary medicines and the generally positive attitudes of consumers towards the safety of these products, the level of self-initiated use is perhaps not surprising. What is surprising is the lack of communication reported between consumers and healthcare professionals regarding use of complementary medicines. Of the 1 574

respondents using complementary medicines in the 2004 SAHOS, over half (53%) were taking these products without their doctor's knowledge.² This is consistent with the results of the 2000 SAHOS which reported that 57% of the 1 240 respondents who used complementary medicines, but not on their doctors advice, did not disclose use.⁷ These findings also support previous studies which reported poor disclosure rates of complementary medicine use by consumers.^{24,49,69-71}

Consumer attitudes towards complementary medicines can be seen to influence the reasons why they do not discuss use with healthcare professionals. A survey of CAM use by among 48 parents of paediatric cancer patients asked respondents why they didn't discuss this use with their children's doctor.⁵¹ Comments varied, however the authors reported that "most parents felt that it was their choice to use the therapies and as such there was no need to discuss their use with the children's doctors". Similarly, 'personal choice' to use CAM was reported as a typical reason why parents had not told healthcare professionals about use in a survey involving 174 paediatric patients with asthma.³⁵ A number of surveys also report that consumers thought that complementary medicine use was not a relevant topic to discuss with their healthcare professional.^{26,35,70}

The fact that healthcare professionals 'didn't ask' about use was also commonly reported as a reason for the lack of communication about complementary medicines.^{35,52,72} A point highlighted in a survey of patients with prostate cancer in the United Kingdom.⁷³ Of the 168 respondents, only 7% reported that they had been asked by their urologist if they were taking any non-prescribed/alternative medicines for their prostate condition.

Consumer's perceptions of healthcare professional's attitudes towards complementary medicines were also evident in the reasons provided for not discussing use. Fears that the patient's doctor would be 'sceptical', 'cynical', 'unsupportive' or 'offended' were all reported as reasons for not discussing use.^{35,51,52,70}

Summary

The majority of complementary medicine use is self-prescribed by consumers. This is often not disclosed to their treating healthcare professional. Consumer attitudes towards these products along with a belief that healthcare professionals will disapprove of use contribute to the poor level of disclosure reported.

Healthcare professionals and complementary medicines

The literature indicates that complementary medicines are commonly used by Australian consumers.^{2,14,19} The most reliable prevalence figures report that over half (52%) of the 2004 SAHOS sample had used complementary medicines in the previous year.² Use occurs in a diverse range of ages and patient types.^{13,17,24,26}

Given the prevalence of use it can be assumed that most healthcare professionals encounter consumers taking complementary medicines. However, the literature indicates that healthcare professionals may underestimate this use.^{3,74,75} Indeed, in a survey of Victorian general practitioners (GPs) a third of the 488 respondents estimated that less than 10% of their patients used complementary therapies.³ An estimate well below that indicated by population-based research.

Inaccurate perceptions about the level of use may result from a lack of communication between consumers and healthcare professionals about complementary medicines. A common reason why consumers did not disclose use is, as indicated previously, because the healthcare professional 'didn't ask'.^{35,52,72} However, GPs also report that consumers do not often ask about complementary medicines.⁷⁶ As the literature indicates that many consumers may not be aware of the potential for adverse effects and interactions⁶⁸, healthcare professionals must be proactive in enquiring about complementary medicine use.

It has been reported that the degree to which healthcare professionals are proactive in enquiring about complementary medicines may be influenced by their attitudes towards these products.⁷⁷ Attitudes towards and recommendations of complementary medicines will therefore be explored. As attitudes may vary between healthcare professions, this section will be divided into:

- doctors
- nurses
- pharmacists
- other healthcare professionals.

Attitudes of doctors towards complementary medicines

The literature indicates that consumers have, in general, accepted and embraced complementary medicines. Signs of acceptance are also evident in conventional medicine. In 2002, the Australian Medical Association released a formal position statement on complementary medicine recognising 'that evidence-based aspects of Complementary Medicine are part of the repertoire of patient care and may have a role in mainstream medical practice'.⁷⁶ The statement was endorsed by the Royal Australian College of General Practitioners (RACGP).¹ A joint working party was subsequently formed with the Australasian Integrative Medicine Association and the RACGP to review training needs of doctors and provide an outline of how CAM can be incorporated into high-quality clinical practice.¹ While these moves indicate increasing acceptance of complementary medicines by national medical associations, it is of interest to review if this increase is paralleled by those practicing in the field.

Several surveys to date have explored the attitudes of Australian doctors towards complementary and alternative medicines and practices.^{3,76,78-83} It is evident from these surveys that doctors are aware of a wide range of CAM therapies. This is best illustrated by a survey of Victorian GPs.³ At least 80% of the 488 respondents (64% response rate) reported they knew something of acupuncture, hypnosis, meditation and chiropractic; about half knew something of herbal medicine, naturopathy and vitamin and mineral therapy; while 60% to

70% had only heard of osteopathy, homeopathy, spiritual healing, reflexology and aromatherapy. The sample was reported by the authors to be representative of Australian GPs in terms of sex, age distribution and metropolitan or rural practice location. However, doctors seeing more than 200 patients per week were under represented.

Attitudes towards CAM have been explored in a variety of ways. Two surveys examined overall attitudes towards CAM by asking respondents if they agreed or disagreed with a number of statements.^{79,81} The first involved distribution of a questionnaire to all 93 members of the South Australian branch of the Royal Australian and New Zealand College of Obstetrics and Gynaecology.⁸¹ Most of the 75 respondents held positive views about CAM, with 72% agreeing or strongly agreeing with the statement: 'CAM is a useful supplement to regular medicine'. In addition, 79% agreed or strongly agreed that 'CAM includes ideas and methods from which regular medicine could benefit.' In the second survey, 467 GPs in Tasmania were posted a questionnaire.⁷⁹ Of the 290 respondents, younger practitioners, who practiced in smaller clinics, and had patients whom endorsed the therapies, were more likely to respond positively to the CAM statements. While these surveys indicate overall positive attitudes towards CAM, it is possible that these findings may not accurately reflect attitudes towards all therapies encompassed by this definition.

Differences in doctors attitudes towards individual therapies encompassed by the CAM umbrella are evident in a number of surveys exploring this topic.^{3,76,78,80,81} In the Victorian GP survey, most of the 488 respondents rated the well-known therapies (acupuncture, meditation, hypnosis and chiropractic) as moderately to highly effective.³ However, the majority felt herbal medicine, naturopathy, vitamin and mineral therapy and homeopathy to be moderately to seldom effective. While most GPs did not report CAM therapies to be frequently harmful, herbal medicine, naturopathy, vitamin and mineral therapy were reported in the top four most likely to cause harm. When given the opportunity to write comments, many doctors indicated that harm may be caused by these therapies if a diagnosis is delayed or missed, or if a proven therapy is neglected.

Differences in attitudes regarding the effectiveness of individual CAM therapies were also noted in the survey of South Australian obstetricians and gynaecologists.⁸¹ Most of the 75 respondents (60% to 70%) considered massage, acupuncture, vitamins, yoga, meditation and hypnosis to be 'useful' during pregnancy. Almost half of respondents considered homeopathy, aromatherapy, herbal therapies and naturopathy as 'not useful' or they held no opinion on the usefulness of these therapies. At least one-third of respondents thought that the safety of homeopathy, herbal medicine and naturopathy had not been established in pregnancy.

Similar findings were reported in a national survey of GPs.⁷⁶ A random sample of 2 000 Australian GPs who had seen at least 1 500 patients in the previous year were sent a questionnaire (636 responded). Attitudes regarding effectiveness and potential harmfulness of 15 CAM therapies were explored. Based on the results the authors concluded that CAM therapies could be classified into three groups:

- high effectiveness/low harm
- moderate effectiveness/moderate harm
- low effectiveness/low harm.

Acupuncture, massage, meditation, yoga and hypnosis were all allocated to the high effectiveness/low harm category. These therapies were characterised by two thirds or more of respondents believing they were 'moderately' or 'highly' effective, with more than 80% considering them 'safe'. Therapies that could be included in the definition of complementary medicines (Chinese herbal medicine, herbal medicine, vitamin and mineral therapy, naturopathy and homeopathy) were grouped as having moderate effectiveness/moderate harm.

Doctors attitudes towards CAM have also been reviewed by exploring opinions on the appropriateness of GPs to practice complementary therapies and eligibility for Medicare subsidy.^{3,76} In the survey of Victorian GPs previously cited, nearly all respondents (97%) thought it appropriate for GPs trained in acupuncture to practice. A much lower level of acceptance was evident for complementary medicines. Of these, vitamin and mineral therapy was the most accepted (44% of GPs indicating acceptance) and homeopathy the least (23%). Doctors who agreed that it was appropriate to practice a therapy were asked whether GPs should be eligible for Medicare funding when practicing. Nearly all (91%) thought eligibility for Medicare rebates was appropriate for acupuncture, compared with 54% for vitamin and mineral therapy and 36% for homeopathy. The 636 GP respondents in the national survey ranked CAM therapies in a similar order.⁷⁶

Attitudes toward eligibility of CAM therapies for Medicare rebates were also explored in a paper that combined data from two Australian studies: a survey of 290 Tasmania GPs and a survey of 488 Victorian GPs.⁸² The authors argued that there are three levels of acceptance of CAM therapies:

- low (vocational registration)
- medium (Medicare rebate)
- high (undergraduate teaching).

Opinions on acupuncture, hypnosis, chiropractic, massage, osteopathy, Feldenkrais and naturopathy were reviewed. The authors reported a consistent, but not absolute, pattern of graduation between acceptance of a therapy for vocational registration to much less acceptance of it for initial medical training. Like previous surveys a clear ordering of acceptance of different CAM therapies was reported with acupuncture at the top and naturopathy at the bottom.

Summary

The literature indicates that doctors overall attitudes towards CAM are positive. However, these findings can not be extrapolated to all therapies in this definition. Acceptance of acupuncture, hypnosis and meditation by Australian doctors appears high. In contrast, a lower level of acceptance is evident for complementary medicines with doctors less confident of efficacy and safety. It remains to be seen if these attitudes reflect practice behaviours such as referring and recommending complementary medicines.

Recommendation of complementary medicines by doctors

Doctors attitudes towards CAM indicate acceptance levels vary depending on the individual therapy. Not surprisingly, it has been suggested that a number of the more widely accepted CAM therapies may now be considered part of 'normal' medical practice in Australia.⁸² A therapeutic practice could be considered part of 'normal' medical practice when a significant proportion of GPs either refer patients to or practice the therapy themselves.⁸² Research indicates attitudes towards CAM and practice behaviours such as referring do not always correlate.⁸⁴ It is thus important to explore referral and practice patterns to establish if complementary medicines may be considered a 'normal' part of medical practice in Australia.

Australian doctors do make referrals for CAM therapies, as illustrated by a survey sent to 400 Perth GPs in 1998.⁸⁰ Of the 282 respondents, 68% were in favour of referring patients to complementary therapists as part of their medical treatment. The primary factor favouring referral was a positive past experience with the CAM therapy. A lack of government regulation and training standards were cited as the main factors influencing those who did not make CAM referrals. As found when exploring attitudes towards CAM, different rates of referral were identified for individual CAM therapies. More than half of GPs surveyed had formally

referred patients for acupuncture. In contrast, only between 1% and 8% had referred patients for homeopathy, herbal medicine or naturopathy.

Higher referral rates were reported by 488 Victorian GPs responding to a survey in 1997.³ While 90% of respondents indicated they had referred a patient for acupuncture, 33% had referred for vitamin and mineral therapy. In addition, 30% had referred for naturopathy, 29% for herbal medicine and 20% for homeopathy, with most indicating the frequency of such referrals to be rare. The higher referral rates could reflect differences in referral patterns for GPs in different states but, it is more likely that differences in wording between the two questionnaires influenced the rates reported. 'Formal' referrals were requested in the Perth survey whereas information on all referrals was called for in the Victorian survey.^{3,80}

In the Victorian GPs survey, respondents were asked how they would react if a patient suggested consulting a CAM practitioner.³ Overall, 17% indicated they would encourage a patient's suggestion to attend a therapist for vitamin and mineral therapy. While percentages reported for naturopathy, herbal medicine and homeopathy were 13%, 12% and 9% respectively. Compared with the referral rates from the same survey (above), GPs were twice as likely to have referred a patient for these therapies as to endorse a patient's suggestion.

The results of a national survey of GPs undertaken in 2004 indicate similar referral patterns to those reported in the Victorian survey.⁷⁶ Of the 636 respondents, 36% had referred for vitamin and mineral therapy, 22% for naturopathy, 27% for herbal therapy and 10% for homeopathy. Similar to the Victorian survey, GPs were twice as likely to have referred a patient for these therapies as to endorse a patient's suggestion. These findings are surprising given that patient pressure has been acknowledged as a factor in medical referrals.³ A possible explanation may be that doctors consider such therapies appropriate for specific conditions only.

St John's wort was primarily recommended for a specific condition in a survey of 1 910 members of the Royal Australian and New Zealand College of Psychiatrists.⁸⁵ Of the 862 respondents, 25% reported they had recommended the herb, with nearly all (93%) recommending it for depression. A minority (29%) recommended St John's wort for anxiety, with less than 4% recommending the herb for a range of other conditions.

It is unlikely that the reported proportion of psychiatrists recommending St John's wort in the above survey reflects their prescribing patterns for other herbs. However, the literature indicates that some doctors do practice in the area of complementary medicines.³ In the survey of Victorian GPs, 12% of the 488 respondents indicated that they had undertaken training in herbal medicine with 62% of those trained practicing in the area. The authors noted that the practice of homoeopathy, vitamin and mineral therapy, naturopathy or herbal medicine, represented more than half of the clinical work load for a small number of Victorian GPs.

Reasons why doctors prescribe complementary medicines were rarely reported in the literature. A survey of healthcare professionals at Rutgers university in New Jersey, provides limited insight.⁵³ A range of healthcare professionals (n=70), including nurses, physicians, pharmacists and psychologists, were sent the survey with 40 responding. Of the respondents, 28 reported recommending herbal medicine as part of a patient's treatment plan. Treatment of specific symptoms (53%) was the most frequent circumstance in which herbal medicine was prescribed. Other uses included improvement of well being (35%), emotional symptoms (30%), and prevention of illness (30%). However, as a range of health professionals were included in the sample and the number of participating doctors was unspecified, limited conclusions can be drawn from this survey.

Finally, a study focusing on factors that influence the prescribing of complementary medicines by doctors was undertaken in Brisbane.⁸³ General practitioners who used CAM in their daily

practice were randomly selected from the 'Directory of RACGP Members and their Special Interests'. Interviews were conducted with 17 GPs, 3 of which practiced nutritional medicine or homeopathy. The authors reported two major trends for the increased use of CAM by GPs: consumer demand; and 'postmodern values'. All but one of the doctors interviewed recognised increased consumer demand as a factor influencing their use of CAM. A GP who practiced acupuncture, and nutritional and environmental medicine was quoted as saying:

Within three months, we were fully booked with sick people. I'm not kidding, fully booked. There just isn't room for anyone to come straight in. There's usually a two-week waiting period. So the demand is there and the pressure is there and the future is there.

Nine doctors indicated that the increase in consumer demand for CAM had resulted in growing competition from CAM practitioners. Interviewees were therefore employing CAM practices to maintain a competitive edge. In addition, the GPs interviewed noted that consumers wanted choices and they wanted to be able to give it to them.

And this is why we have to look at options I think – the public wants alternative medicine – they are much more informed and interested in that sort of treatment – people are demanding it and I think that the medical people have to get out there and do it because at least we have the background and the knowledge to do it sensibly and not to put people at harm.

The second theme identified in the qualitative study of 17 GPs was the emergence of 'postmodern values.'⁸³ All GPs interviewed expressed dissatisfaction at conventional medicine's ability to deal with some commonly treated clinical problems. The authors found that this criticism of conventional medicine was coupled with support for holistic health values and beliefs. These beliefs included recognition of the self-healing capacity of the individual and the body as a mind-body-spirit continuum. In addition, it was reported that while interviewees still expressed faith in science, clinical legitimacy was often reported as a reason for CAM use. The authors noted that the doctors interviewed claimed, without hesitation, that they used CAM therapies because 'they work' and were successful in achieving clinical results. While these results provide some insight into the factors that influence doctors prescribing complementary medicines, the small sample size and the range of CAM therapies practiced means that more research is required.

Summary

The literature indicates that Australian doctors do recommend CAM therapies, either by referral or, to a much smaller degree, by practicing in the area themselves. As found when exploring doctors' attitudes towards CAM, differences in referral rates are apparent between individual CAM therapies. Referral rates for therapies included under the heading of 'complementary medicines' were considerably lower than those reported for more accepted therapies such as acupuncture. It is thus unlikely that the use of complementary medicines could currently be considered a 'normal' part of medical practice in Australia. However, a small minority of GPs are actively practicing in the area.

Attitudes of nurses towards complementary medicines

Nurses are among several groups of practitioners who have expressed interest in complementary medicines.¹⁰ The wide distribution of nurses in both hospital and community settings means that they are in a position to introduce these therapies to a large number of individuals. It is thus important to explore their attitudes towards complementary medicines.

Positive attitudes towards the broader concept of CAM were reported in a small survey of nurses from the South Australian Royal District Nursing Service (RDNS).⁸⁶ The 56 nurses who completed the questionnaire (88% response rate) responded to six statements about

CAM. Based on responses, a total attitude score was derived with a minimum score of 6 and a maximum score of 30. The mean total attitude score was 23.8 (standard deviation = 3.6) suggesting that RDNS nurses were generally positive towards CAM and its use in nursing practice.

These findings are comparable to a survey exploring attitudes of midwives towards CAM.⁸¹ Members of the South Australian branch of the Australian College of Midwives were sent a questionnaire, with 145 midwives responding (78% response rate). The midwives were asked to reply to ten statements about CAM. Although an attitude score was not calculated, responses indicated that CAM was seen as a useful supplement to regular medicine. A comparison between midwives and their medical counterparts was also made as 75 South Australian obstetricians also responded to the questionnaire.⁸¹ Comparing professions, a greater proportion of midwives responded positively to the CAM statements ($p < 0.01$).

The type of evidence base required for CAM also provides insight into nurses' attitudes towards these therapies. In the survey of South Australian midwives and obstetricians, only 30% of midwives agreed that there needs to be a scientific base for CAM compared with 72% of obstetricians ($p < 0.001$).⁸¹ Attitudes similar to those reported for midwives were found to be held by critical care nurses in the USA.⁸⁷ A random sample of 2 000 nurses from the American Association of Critical Care Nurses database were surveyed. The 726 respondents were asked to rate how important it was to have certain types of evidence available to consider when recommending either conventional therapies or CAM. The percentage of respondents who rated evidence as essential for conventional therapies was significantly greater than the percentage who rated such evidence as essential for recommending CAM. Comparable results were also reported in a smaller survey of Critical Care Nurses in the United States.⁸⁸ Of the 138 respondents (40% response rate), a significantly higher proportion of nurses thought it was 'essential' or 'somewhat essential' to have information on a proven mechanism for conventional therapies than for CAM (94% versus 85%, $p = 0.004$). However, this trend was not reported for all evidence types with similar proportions considering clinical trial information essential for both conventional and CAM therapies.

Trends indicating nurses having a reduced need for evidence to support CAM use may reflect their attitudes towards the efficacy and safety of these therapies. The survey of South Australian midwives reported that respondents held strong beliefs that CAM was useful during pregnancy however, the perceptions of usefulness varied for individual therapies.⁸¹ Massage (91%) and yoga (85%) were perceived useful by the highest proportion of respondents. In terms of complementary medicines, most (75%) reported vitamins to be useful during pregnancy. A smaller number of midwives indicated herbal medicine (56%), naturopathy (50%) and homoeopathy (46%) were useful. In all instances, the proportion of midwives reporting complementary medicines to be useful was greater than the proportion of obstetricians. Attitudes towards the safety of vitamins during pregnancy were similar between midwives and obstetricians (70% of midwives considered them safe versus 72% obstetricians). In contrast, the proportion of midwives reporting herbal medicine (40%), naturopathy (45%) and homoeopathy (38%) to be safe during pregnancy was almost double that of obstetricians.

Attitudes of critical care nurses towards the efficacy and safety of complementary medicines have also been explored.^{87,88} Complementary medicines were a subset of the 28 CAM therapies reviewed in the survey of members of the American Association of Critical Care Nurses.⁸⁷ All but four of the 28 CAM therapies were viewed as 'neutral to beneficial' by more than 90% of the 726 respondents. Of the four, two were complementary medicines; these were high-dose vitamins ('megavitamins') and herbal medicine, which were viewed as 'neutral to beneficial' by 81% and 86% of respondents respectively. Similar findings were reported in the smaller survey of Critical Care Nurses.⁸⁸ Almost all of the 138 respondents judged the 28

CAM therapies reviewed to be 'neutral to beneficial' in their effects. However, megavitamins were judged to be 'not neutral to harmful' by the highest proportion of respondents (17%) while herbal medicines (12%) were third highest. The attitudes expressed in these two surveys suggest a lower level of confidence in the efficacy and safety of megavitamins and herbal medicine when compared with other CAM therapies. However, these findings can not be extrapolated to all complementary medicines therapies as homeopathy and traditional Chinese medicine were also reviewed in both surveys.

Summary

Generally positive attitudes towards CAM are evident among nurses. Limited data suggests that nurses attitudes towards complementary medicines maybe more favourable than those of their medical colleagues. Small differences in attitudes towards the efficacy and safety of individual complementary medicines were reported. However, these conclusions should be interpreted with caution due to the paucity of studies identified, and only few of these were Australian. The specialised nature of the areas of nursing sampled, along with small sample sizes, may also limit the ability to extrapolate results obtained.

Recommendation of complementary medicines by nurses

Nurses are often actively involved in informing individuals about their health and health care options.¹⁰ The research explored in the previous section indicates that complementary medicines are generally seen as a useful health care option by nurses. Given nurses high degree of contact with individuals in the community, recommendation patterns could impact significantly upon the uptake of complementary medicines. Referral rates and use of complementary medicines in practice by nurses will therefore be explored.

A questionnaire distributed to all 4 163 members of the New South Wales College of Nursing reviewed CAM referral patterns.⁸⁹ Of the 832 respondents 67% indicated that they would refer a patient to a CAM practitioner. Referral for relaxation therapy was the most common (41%), followed by referral to a practitioner of naturopathy (34%). A smaller proportion of nurses indicated they would refer to a practitioner of homeopathy (17%), traditional Chinese medicine (16%) or herbal medicine (16%).

Higher referral rates were reported in the survey of South Australian midwives.⁸¹ Of the 145 midwives responding, 33% reported that they would refer a patient to the use of herbal medicine and/or naturopathy. Most midwives also indicated that they would refer a patient for vitamins (69%) or homeopathy (66%). The accepted use of specific complementary medicines to treat conditions in pregnancy may have influenced the higher referral rates. Alternatively the authors note that midwives are working with young women who are generally high users of these therapies and hence a request for referral may have been initiated by the women themselves.⁸¹

Seventy five South Australian obstetricians responded to the same questionnaire as the midwives.⁸¹ The authors reported that midwives were more likely to refer patients for CAM than obstetricians. This was particularly evident for homeopathy where 66% of midwives indicated that they would refer a patient for therapy compared with only 7% of obstetricians.

Along with recommending the use of complementary medicines, the literature also indicates a minority of nurses are using them in practice.^{87,89} Around 5% of respondents to a survey of members of the New South Wales College of Nursing reported that they had used herbal medicine with a patient.⁸⁹ A smaller proportion of the 832 respondents indicated that they had used naturopathy (2%), homeopathy (1%) or traditional Chinese medicine (1%) with a patient. Although one assumes that the nurse initiated therapy, this is not clarified in the survey.

Comparisons of usage patterns with the remaining Australian studies are difficult. Almost half (46%) of the 56 nurses responding to a survey of the South Australian RDNS indicated that they used CAM in their current nursing practice, albeit infrequently.⁸⁶ However, the proportion using complementary medicines was not differentiated. In addition, a survey of readers of the *Australian Nursing Journal* reported that of the 356 respondents, 81% were using CAM.⁹⁰ Although naturopathy and homeopathy were among the CAM therapies identified, the proportions using these therapies was not reported. Furthermore, the lack of study details provided and the inability of the survey instrument to separate professional and personal use severely limits what can be taken from the survey.

Comparisons with international usage patterns is possible. Complementary medicines appear to be used more commonly in practice by critical care nurses in the USA than Australian nurses.^{87,88} Almost a quarter (24%) of the 726 respondents to the survey of members of American Association of Critical Care Nurses indicated that they had used herbal medicine in practice.⁸⁷ Megavitamins had been used in practice by 32% of respondents and homeopathy by 11%. A smaller survey of 138 critical care nurses reported a similar proportion had used megavitamins in practice (33%). Use of herbal medicine (14%) and homoeopathy (12%) were also reported. As noted for the survey of New South Wales nurses, clarification of the actual role of the nurse in initiating therapy was not provided. It is possible that 'use in practice' could be interpreted by some respondents as administering a complementary medicine that has been written on a drug chart rather than their own initiation of such therapy. Further research is therefore required to clarify the proportion of nurses initiating complementary medicines.

Factors influencing recommendation of complementary medicines or CAM by nurses appear diverse. Adopting natural therapies to complement nursing practice was supported as a factor that influenced the use of CAM by 61% of South Australian RDNS nurses surveyed (n = 56).⁸⁶ The second most supported factor influencing use was 'staff/workplace support' (57%) followed by a 'personal interest in natural therapies' (48%) and 'requested by patients' (45%). In a separate survey, the most frequently cited factor contributing to recommendations for CAM was the modality's fit with the patient's belief system (71%).⁹¹ The survey involved distribution of a questionnaire to a random sample of 400 nurse practitioners from Missouri and Oregon in the USA. Other reasons for referrals noted by the 151 respondents included patient requests for CAM therapy (56%), the ability of CAM treatment to complement conventional treatment (52%) and their own personal experiences with CAM treatment (51%). Less common factors were the nurse practitioner's knowledge of CAM therapies (34%), patient's lack of response to conventional treatment (33%), better treatment of health problem with CAM therapy (31%) and availability of CAM therapy in the community (26%).

In contrast to the diverse factors influencing recommendation, the author of the survey of South Australian RDNS suggests that four factors constrain the use of CAM in practice by nurses:

- lack of opportunity
- lack of knowledge
- lack of time, and
- lack of interest.⁸⁶

These factors were presented to the 56 survey respondents to determine the degree of support. The most supported factor for not applying CAM in nursing practice was reported to be a 'lack of opportunity' with 57% agreeing with this statement. The only factor not considered to be a barrier to the use of CAM in nursing was a 'lack of interest', as over half of respondents (52%) disagreed with this statement. Similar findings were reported in the two surveys of critical care nurses in the USA.^{87,88}

Summary

As reported for doctors, nurses do appear to recommend complementary medicines to individuals as part of their health care options. Limited literature indicates that patterns of referral may differ among nursing specialties and between the nursing and medical profession. In addition, limited data indicates nurses' use of complementary medicines with patients is uncommon, and further research is required to clarify the proportion initiating such therapies.

Attitudes of pharmacists towards complementary medicines

Like nurses, pharmacists are in an ideal position to discuss health care options with individuals. In addition to being able to provide information on conventional medicine options, pharmacists play an important role in providing information on and supplying some complementary medicines.⁹² Despite this role, little research was identified that explored pharmacists attitudes towards complementary medicines.

An Australian survey reported that pharmacists held generally positive attitudes towards the broader concept of CAM.⁹² The survey questionnaire was distributed to 1 500 pharmacists randomly selected from the Pharmacy Board of New South Wales register. Of the 484 respondents, 77% agreed that CAM is a useful supplement to conventional medicine, while 73% felt that CAM includes ideas from which conventional medicine could benefit. These attitudes may be more reflective of attitudes towards complementary medicines than the broader CAM as when asked to define CAM almost a third (35%) reported that it is 'botanical or nutritional agents that may be used as a preventative, curative, or adjunctive therapy' rather than the broader sense.

In contrast to their medical counterparts, the Australian survey also found that complementary medicines ranked highly when the usefulness of individual CAM therapies was explored.⁹² Herbal medicine was ranked as the most useful type of CAM overall by the highest proportion of respondents (17%) and in the top 10 most useful therapies by 74%. Naturopathy was ranked in the top 10 most useful CAM therapies by respondents (61%), as was traditional Chinese medicine (49%) and homeopathy (38%). However, usefulness may not necessarily equate with views on efficacy as the highest percentage of undecided responses were reported for statements that related to efficacy.

Herbal medicines were also considered useful in a survey of pharmacists in the USA.⁹³ The survey involved distribution of a questionnaire to a random sample of 1 017 pharmacists with an active Minnesota pharmacy licence. Of the 533 respondents, 80% agreed that they 'believe at least some herbal or natural products work and would recommend them to patients.' However, as reported in the Australian survey, respondents were less convinced of the efficacy of herbal or natural products. Only 51% of respondents indicated that they 'believe that most herbal or natural products are safe', and only 19% indicated they 'believe most herbal or natural products are effective'.

Summary

Limited literature indicates pharmacists hold positive attitudes towards complementary medicines, often considering them useful and safe. However, many pharmacists appear to question the effectiveness of these products.

Recommendation of complementary medicines by pharmacists

Australian consumers commonly purchase complementary medicines from pharmacies.^{16,94} Indeed, in 1998 Australian consumers spent \$46.6 million on herbal products in pharmacies alone.⁶⁷ While pharmacies may be a common source of complementary medicines, available data suggests many pharmacists may question the effectiveness of these products. It is therefore of interest to explore whether pharmacists or consumers drive the recommendation of complementary medicines in this setting.

A survey of New South Wales pharmacists (n = 484) found that they commonly recommend CAM, with recommendations made to consumers on a daily basis by 23% of respondents.⁹² In addition, 20% of respondents reported they recommended CAM on a weekly basis, 5% on a monthly basis and 35% did so occasionally. Although, 16% reported having never recommended any form of CAM.

Consumer demand was identified as the primary motive for recommendations by 13% of respondents to the New South Wales survey.⁹² Most of the remaining respondents (65%) believed their recommendations to be driven primarily by an ethical motive or a balance between profit and ethics (16%). However, even if consumer demand was not the primary motive of all respondents, most felt that selling CAM increased the number of customers (87%) and increased annual sales (72%).⁹²

Consumer demand was identified as a primary factor influencing recommendation of complementary medicines by pharmacists in the USA.⁹³ Over half (53%) of the 533 respondents reported they 'would only suggest a herbal or natural product if the consumer brought it up first'. A smaller proportion of respondents (38%) indicated they 'would bring up the subject of herbal or natural product use themselves when talking with a patient about a health concern'. In addition, when asked to indicate factors considered 'very important' for influencing decisions to stock a herbal/natural product in the pharmacy the most common were: patient request, consumer demand/popularity, reputation of manufacturer, and physician request/recommendation. Indicating that market sources of information may influence recommendations of herbal/natural products.

Summary

The literature suggests that pharmacists commonly recommend complementary medicines. However, the limited data indicates that such recommendations are often influenced by consumer demand, with many pharmacists reporting they would only suggest a complementary medicine if the consumer brought it up first.

Attitudes of other healthcare professionals towards complementary medicines

Limited research has been undertaken investigating attitudes of 'other' healthcare professionals towards complementary medicines. In this context the term 'other' is used to mean healthcare professionals other than doctors, nurses and pharmacists. Students studying medicine, nursing, pharmacy or another healthcare profession were also included in this definition. Research was identified for dietitians and students.

Attitudes of dietitians towards functional foods, nutrient supplements and herbs were explored in one survey.⁹⁵ The survey involved distribution of a questionnaire to a random sample of 202 dietitians in the USA, with 162 responding. More than 80% of respondents believed functional foods and nutrient supplements to be effective for maintenance of good health and prevention of chronic illness. More than two thirds thought them to be effective for the

treatment of acute illness. In contrast, only around half thought herbal medicines were effective for any of these purposes. Confidence in the safety of herbs for any of these conditions was also lower when compared with attitudes towards functional foods and nutrient supplements. Positive attitudes towards the safety of functional foods (94%) and nutrient supplements for the treatment of chronic illness (91%) were also reported. However, positive attitudes towards the safety of herbal medicine were reported for only 59% of respondents.

The responses of dietitians consistently indicate that many view the recommendation of herbs outside of their professional role.⁹⁵ Less than one third of respondents had recommended herbal medicines in the last year. In contrast, functional foods and/or nutrient supplements had been recommended at least once for the maintenance of good health by 91% of respondents over the same period. Similarly, only 12% of dietitians surveyed indicated that their colleagues would support their recommendation of herbs but, 78% thought they would be supported in their recommendation of functional foods or nutrient supplements.

The degree to which healthcare professionals support the recommendation of complementary medicines in the future may depend upon the attitudes of today's students.⁹⁶ Attitudes of fourth-year medicine, pharmacy, nursing, physiotherapy, and occupational therapy students towards CAM were reported in one survey.⁹⁶ Questionnaires were distributed during classes at two Universities in Canada, with almost full participation of those present. The number of respondents were: physiotherapy (n = 90), occupational therapy (n = 101), nursing (n = 86), pharmacy (n = 102) and medicine (n = 61). Students overall attitudes towards CAM were positive. However, compared to all other students, medical students were the least likely to agree or strongly agree that, 'CAM is a useful supplement to regular medicine', or that 'CAM includes ideas and methods from which regular medicine could benefit'. The percentages of students in the different programs rating a therapy as useful or very useful were highest for chiropractic, herbal medicine, and massage therapy. Medical students rated all such therapies less useful compared with all other students.

A separate survey explored the attitudes of first and third-year medical students towards 18 CAM therapies.⁹⁷ Students attending classes at two Universities in the United Kingdom were asked to complete a questionnaire (n = 311).⁹⁷ Although the majority of students reported that they did not 'have a lot of knowledge about' the 18 therapies, they considered just over half of these therapies effective. Intensive counselling was rated as effective by 93% of respondents, followed by acupuncture (80%), and body work (76%). Of the complementary medicine therapies, homeopathy was rated as effective by half of respondents (50%), with herbal and nutritional medicine rated effective by 37% and 63% respectively. These results suggest, a lower level of acceptance is evident for complementary medicines with students less confident of efficacy when compared with a number of other CAM therapies.

A survey of third-year medical students at the University of South Florida also indicated students were less confident of the efficacy of some complementary medicine therapies.⁹⁸ Of the 78 respondents, meditation and massage therapy were considered to be 'useful' or 'very useful' by 90% and 87% of respondents respectively. Herbal medicine was considered 'useful' or 'very useful' by 73% of respondents. In contrast to the previous survey, students were less confident about the efficacy of homeopathy, with only 18% considering this therapy 'useful' or 'very useful' and 58% having 'no opinion'. A finding that may reflect differences in acceptance levels of different CAM therapies between countries, as homeopathy has been reported to be well accepted by doctors in the United Kingdom.¹⁰

Summary

The findings reported in this section mirror those reported for doctors, nurses and pharmacists. Generally positive attitudes towards CAM and complementary medicines were reported. However, differences in levels of acceptance of individual therapies were identified.

Information on complementary medicines

Unlike conventional medicines, consumers have largely unrestricted access to complementary medicines. Consumers are thus in a position to self-initiate these products, and the literature indicates that they regularly do.²³⁻²⁵ Similarly, unlike conventional medicines, formal education on complementary medicines is absent from the training of many healthcare professionals.⁹⁹ However, the literature indicates that healthcare professionals do recommend complementary medicines in their practice.^{3,92} Access to high-quality information that meets the needs of consumers and healthcare professionals is thus essential to ensure the optimal use of complementary medicines.

Information sources used to aid decision making on complementary medicines

Consumers

Nowhere is the consumer driven nature of complementary medicines more evident than when reviewing the information sources used by consumers to aid decision making. Friends or family were reported as the primary source of complementary medicines information in all but one of the nine studies exploring sources used by consumers.^{36,37,40,42,50,53,100,101} This finding was consistent across a diverse range of Australian and international surveys.

A qualitative study of 36 Canadian women with breast cancer may provide insight into why family or friends are commonly reported as the primary source of information.¹⁰² Focus groups identified the provision of information on CAM therapies by family or friends as a common theme. The authors indicated that the context was highlighted by the following quote:

Once people knew that I had cancer, anything they heard on TV or in the newspapers [about CAM], they'd tell me.

This quote illustrates how family or friends are commonly identified as a primary source of information on CAM, but also signals that the media may be the underlying source of information.

The importance of the media as a source of information was highlighted in the one survey where friends or family were not the primary source of information.⁶⁸ Health fair visitors in a small city in the USA were asked to complete a questionnaire, 169 agreed to participate.⁶⁸ Over half of the respondents (57%) indicated that they used television and magazine advertisements as their primary source of information about health products such as herbs. Family or friends (46%) were listed as the second most common source of information.

Similarly, the media was noted as the second most common source of information in three studies^{36,37,50}, and in the top four in a further four studies.^{40,42,53,100} Newspapers (22%), television/radio (22%), and magazines (21%) were the types of media used in a survey of 300 consumers in rural New South Wales.³⁶ A finding consistent with that reported in a survey of 271 nursing, pharmacy and biomedical science students in New South Wales.³⁷

Healthcare professionals, including doctors, nurses and pharmacists, were less commonly reported as a source of information on complementary medicines.^{36,37,40,50,53,68,100} It has been suggested consumers may be uncomfortable talking with healthcare professionals about complementary medicines for fear of disapproval.¹⁰³ A population-based survey of 3 000 consumers in the United States reported that this may change in the future.¹⁰⁰ Of the 250 respondents, only 1 in 5 had used pharmacists or doctors as an information source for herbal

supplements. Only 1 in 10 respondents consulted a nurse or a nurse practitioner. However, for each of these three healthcare professionals, 60% to 70% of respondents indicated that they 'might' use them for information in the future. The survey also asked respondents to rate the value of information received from each source noted. The authors found that although information was sought less frequently from doctors and pharmacists, consumers placed a higher value on the information obtained. Similar findings were reported in a separate study of 322 primary-care patients in the USA.¹⁰¹ Family or friends were the primary source of information for the 117 respondents who reported using herbs. However, two-thirds of respondents indicated that they wanted to receive information on herbal medicines from their doctors or pharmacists.

Surprisingly, like other healthcare professionals CAM practitioners were not a common source of information used by consumers.^{40,50,100} Use may increase, as over half (52%) of the 250 respondents to the population-based survey reported that they 'might' use CAM practitioners as a source of information in the future.¹⁰⁰

Despite the attention given to the Internet as a source of information, only five studies were found which reviewed its use by consumers for complementary medicines information.^{36,37,53,68,100} The most recent of these was conducted over two years ago. In each of these studies the Internet was among the least used sources of information on complementary medicines. A survey of 300 consumers in rural New South Wales indicated that this under use may be because of a lack of facilities in some of the areas investigated.³⁶ However, Internet use was also low in two surveys of students attending University.^{37,53} Further research is required to identify if consumers currently use the Internet for this information in Australia.

Healthcare professionals

Most research available on sources of information used by healthcare professionals focuses on pharmacists.^{92,93,104} Very few studies addressing this question were found for other professions. The limited research available indicates there are many similarities in the information sources used by different healthcare professionals to aid decision making when prescribing or recommending complementary medicines.

A range of resources were reported as the primary source of information on CAM in a survey of Australian pharmacists.⁹² A random sample of 1 500 registered pharmacists in New South Wales were sent a questionnaire. The 484 respondents indicated the most frequently used information sources were: books and magazines (25%), journals (29%) and a combination of resources (22%). Other resources included: university or other training (8%), manufacturer-provided information (9%) and the Internet (4%).

Books and magazines were also reported to be the most frequently used source of information on herbal medicine in a survey of pharmacists conducted in Singapore.¹⁰⁴ Pharmacists attending an international conference in Singapore, along with those working in Singapore, were surveyed. Of the 420 respondents, 64% reported that they learned about herbal medicine from books and magazines. Additional sources included: friends or family (36%), the Internet (31%), pharmacists (18%); sales promoters (14%), television (10%), doctors (4%), or 'other' means (20%).

Books, trade journals, professional newsletters and continuing education were the information sources for herbal/natural products used most frequently in a survey of 533 pharmacists in the USA.⁹³ When asked to identify information sources respondents thought were 'very important for determining the safety and effectiveness of herbal/natural products' the top ten were:

- reports in trade journals, professional newsletters (71%)
- continuing education seminars/coursework (68%)

- information from reference books (63%)
- journal articles describing randomised clinical trials (57%)
- journal articles describing case study/anecdotal reports (38%)
- patient feedback (38%)
- personal observation of patient response (33%)
- pharmacist colleague (21%)
- reference web sites (19%)
- physician (18%).

A survey of 105 Australian naturopaths found that, like pharmacists, two of the most common information sources used were professional newsletters (91%) and books (72%).¹⁰⁵ In addition, patient feedback (66%) and personal observation of patient response (58%) were often used by respondents. Use of scientific literature was reported less commonly with around 40% of respondents 'sometimes' using journal articles describing a case study or randomised clinical trials.

Different sources of information were reported to be used by naturopaths to obtain information on adverse events.¹⁰⁵ Of the 105 respondents, 96% reported they were notified about adverse events through manufacturer or distributor newsletters. Other sources of notification were from professional associations (88%), continuing professional education (69%) and informal discussion with colleagues (60%). Less than 30% of naturopaths used the Therapeutic Goods Administration web site as a source of information on adverse events.

Information sources used by Australian oncology practitioners were also found to be comparable to those commonly used by pharmacists and naturopaths.¹⁰⁶ Questionnaires were distributed to oncologists/haematologists (n=190), oncology pharmacists (n=59), and Drug Information Centres (n=36) throughout Australia.¹⁰⁶ The sources of information commonly used for searching about CAM included textbooks, journals, databases, Internet search engines, Internet sites, other professionals, and Drug Information Centres.

Similar to the professions already explored in this section, a survey of nurse practitioners registered in the USA reported lay journals (64%), professional journals (62%), workshops or seminars (55%) and continuing education opportunities (54%) as sources commonly used for CAM information.⁹¹ In contrast to the other professions explored, 67% of the 151 nurse practitioners responding reported that their own personal experience with CAM therapies was their primary source of knowledge. This finding may be influenced by the type of CAM therapies used by nurse practitioners in this survey. Although complementary medicines were included in the definition of CAM, nurse practitioners reported they were most knowledgeable about massage therapy, chiropractic care, meditation, therapeutic touch and nutrition therapy.

Books were the most common information source used in a study of information provided by 32 health food retail outlets in Canada.¹⁰⁷ A random sample of health food retail stores were visited by a research assistant presenting as the mother of a child with Crohn's disease. Recommendations were made by employees (profession unknown) at 23 of these stores, of which 15 were based on a published source of information. One store used a computer database, while 14 of the 23 stores used the book *Prescription for Nutritional Healing*. Despite use of the same book by 14 stores a wide range of herbal and nutritional products were recommended.

Similar findings were reported in a study of recommendations made by health food retail outlet employees in Canada.¹⁰⁸ Recommendations for a patient with breast cancer were sought from 34 outlets: 12 employees reported they received their information from books, 5 from a supplier, 3 had a formal education in CAM, 2 had in-store training and 12 did not disclose their source of information.

Summary

Family or friends and the media were the information sources used most commonly by consumers; highlighting the consumer-driven nature of complementary medicine use. Healthcare professionals and CAM practitioners were often not consulted when consumers were considering using complementary medicines. A small number of studies indicated that the Internet was used less often than other information sources.

A variety of information sources were used by healthcare professionals including: books, magazines/trade journals, professional journals and continuing professional education seminars. Internet use was reported in a number of studies however, like consumers, uptake was generally low when compared with other information sources. Further research is required to establish if these studies reflect current Internet use patterns.

Accessibility and quality of complementary medicines information

The accessibility and quality of four commonly used sources of information on complementary medicines will be reviewed in this section: media, journals, Internet, books and compendia. The volume of complementary medicines information available in each of these formats is used as an indicator of accessibility.

Media

Accessibility of complementary medicines information in the media

Consumers report that the media is an important source of information on complementary medicines.^{36,37,50,68} Newspapers, television, radio and magazines are formats commonly used.³⁶ Despite this, limited studies have been done reviewing the amount and quality of complementary medicines information provided. Only one study was identified for this literature review.¹⁰⁹

The sole study identified was done in Australia and focused on magazine advertising of complementary medicines to consumers.¹⁰⁹ The three magazines with the highest circulation in Australia were selected: *The Australian Women's Weekly*, *Woman's Day* and *New Idea*. *Good Medicine* was also included as it was the health magazine with the highest readership. All advertisements and advertorials for complementary medicines published between 1 February and 30 April 2001 were collected. The authors reported that complementary medicines advertising accounted for 3% of magazine pages and was three-times more frequent than advertising for conventional over-the-counter products. There were 57 unique advertisements promoting 107 complementary medicine products and 26 unique advertorials promoting 48 products in the 32 magazine issues. Plants or herbal products accounted for 60% of advertising. Most complementary medicines advertisements and advertorials were 'full page' promotions (54%), while 25% of promotions were 'quarter of a page or less'.

Quality of complementary medicines information in the media

Like all therapeutic goods, complementary medicines can only be advertised once they have been included in the Australian Register of Therapeutic Goods.¹¹⁰ Once goods are included, they can be publicly advertised in the mainstream media as long as the advertisements meet the standards set out in the Therapeutic Goods Advertising Code.^{109,110}

If a complementary medicine is to carry a claim that it will 'cure, manage, treat or prevent' a disease or disorder, the product is required to undergo registration.⁴ High-level evidence is required to support these 'high-level' claims for registration.⁴ Claims for the symptomatic relief of conditions (other than serious diseases/disorders), health maintenance and health enhancement and risk reduction are permitted on listable products.⁴ These are often referred

to as medium or general claims.¹⁰⁹ The sponsor must however hold evidence of a level and kind that will support the claim.

In the Australian magazine study most claims were of a medium or general level.¹⁰⁹ Only around 5% were high-level claims, indicating that most manufacturers were complying with guidelines in this area.

In addition, the study reported that all advertisements provided the 'indication for use' of the complementary medicines.¹⁰⁹ However, only 51% provided information on general warnings or precautions (e.g. 'Use only as directed'). Warnings or precautions specific to the product were included in only one advertorial. Information on adverse effects was rarely presented (4%) and where it was presented it was suggested that no adverse effects were associated with the products. None of the ads contained information on contraindications or drug interactions. Most advertisements and advertorials (89%) did not contain references to support their claims or statements.¹⁰⁹ A telephone number for obtaining more information was provided in 40% of ads. Readers were referred to the product label for more information in 25% of advertising.

Summary

The Australian study indicates that advertising of complementary medicines to consumers in magazines is common. In terms of the quality of information provided in these ads, compliance with guidelines about claims appears to be good. However, while not necessarily infringing guidelines the study indicates there is a lack of information on risk.

Research is required for other media formats (i.e. newspapers, radio and television) to establish accessibility and evaluate the quality of complementary medicines information provided.

Journals

Accessibility of complementary medicines information in journals

Given the rising interest in complementary medicines it is not unreasonable to anticipate an increase in journal articles providing information on these. The literature indicates that such an increase is occurring.¹¹¹⁻¹¹³

An analysis of articles focusing on CAM use in HIV/AIDS reported a relatively steady increase in the number of citations on this topic.¹¹³ MEDLINE, CINAHL, EMBASE and MANTIS databases were searched for relevant articles published before 2002. The first articles referencing CAM therapies for HIV/AIDS appeared in 1983. Since then the number of articles has generally increased with peaks of 43 records (1996) and 54 records (2000).

Another study reviewed citations for the 15 most popular herbal supplements in the USA between 1997 and 2002.¹¹¹ The authors searched PubMed for the total number of reports that included the herb name in the title. The number of citations for the 15 herbs increased from 95 in 1997, to 290 in 2002 (a peak of 293 was noted in 2001).

To verify reports of an increase in the number of CAM articles published in the medical literature, the authors of one study analysed the MEDLINE database for the period 1997–2002.¹¹² A systematic search was done using the term 'complementary therapies' and specific searches were conducted for acupuncture, homeopathy, manipulative practices and phytotherapy. A total of 20 209 CAM articles were identified over the 6-year period. This represents around 1% of the total number of MEDLINE listed articles. The authors noted an upward trend between 1997 and 2002, with the proportion of total MEDLINE listed articles increasing from 0.5% to 0.8% respectively.

Clinical investigations were reported in 13% of articles identified in the 6-year review of the MEDLINE database, 59% of which were randomised clinical trials.¹¹² Around 50% of articles identified appeared in journals with no 'impact factor'. Impact factors are a quantitative measure used to compare journals by measuring the frequency with which the 'average article' in a journal has been cited in a particular period.¹¹⁴ While the role of impact factors as a quality indicator is debatable, it has been suggested that articles of higher methodological quality are more likely to be published in journals with a higher impact factor.¹¹² It is thus important to explore the quality of journal articles accessible on complementary medicines.

Quality of complementary medicines information in journals

Limited research has been undertaken exploring the quality of information provided on complementary medicines in journals. Of the articles found, two focused on systematic reviews and one on randomised controlled trials.¹¹⁵⁻¹¹⁷

Systematic reviews involving CAM interventions were found to have a higher quality of reporting than conventional medicine reviews in one of the three studies identified.¹¹⁶ Reviews published before 2000 were identified in a search of MEDLINE, EMBASE, Cochrane and CISCOS databases and the quality of reporting of each systematic review was assessed using the Oxman and Guyatt scale; scoring ranges from 1 to 7, with higher scores indicating increasing quality. This study identified 130 systematic reviews, 25 of these involved CAM interventions. Overall, CAM reviews were rated as being of higher quality, with a median Oxman and Guyatt score of 5, compared with a score of 3 for conventional medicine reviews ($p = 0.01$).

Systematic reviews of clinical trials of herbal medicine, homeopathy and acupuncture addressing the same topic were evaluated in the second article and 17 reviews were identified.¹¹⁵ The authors found that systematic reviews addressing the same topics often differed in their conclusions. Differences were attributable to decisions made during the planning, performance and interpretation of the reviews. For example, because of differences in inclusion criteria the sample of primary studies varied by more than 25% in 15 reviews and more than 50% in 10 reviews. The authors recommended that caution is needed in the interpretation of CAM systematic reviews.

The final study reviewed the quality of randomised controlled trials exploring CAM interventions.¹¹⁷ The trials included were selected from systematic reviews published before 2000 and identified in a search of MEDLINE, EMBASE, Cochrane and CISCOS databases. All trials were assessed using the 5-point Jadad scale, a validated quality scale.¹¹⁷ Of the 612 trial reports identified, 484 were for conventional medicine interventions and 128 for CAM interventions. Adequate randomisation along with losses to follow-up and withdrawals were significantly more likely to be reported for conventional medicine interventions (90% vs 81% $p = 0.001$, and 58% vs 45% $p < 0.01$ respectively). However, CAM trials were significantly more likely to report double blinding than the conventional medicine trials (90% vs 56%, $p < 0.01$). The median quality score was higher for the CAM trials than the conventional medicine trials; however, the difference was not statistically significant.

Summary

The literature indicates an increasing number of complementary medicines articles being published in journals. Limited data suggest the quality of CAM systematic reviews and randomised controlled trials to be comparable to conventional medicine interventions. However, as clinical investigations have been reported to comprise only a small proportion of CAM articles, the quality of the majority of CAM journal articles is unknown.

Internet

Accessibility of complementary medicines information on the Internet

For the estimated 600 million users worldwide the Internet can provide timely access to health information.¹¹⁸ A national telephone survey conducted in the USA in 2002, the Pew Internet Project, found that 62% of Internet users (73 million people) had gone online in search of health information.¹¹⁹ Information on complementary medicines was commonly sought by those wanting such information, with 48% seeking information about alternative or experimental treatments or medicines¹¹⁹

Web sites focusing on complementary medicines are prevalent.^{120,121} One study reported that a user is likely to encounter a CAM web page around 10% of the time when searching for information on arthritis, diabetes or fibromyalgia.¹²¹ The study involved analysis of the first 50 web sites returned by four search engines. CAM-related web sites accounted for 10% of the 599 identified. The prevalence of CAM web pages by disease were 11%, 5% and 14% for arthritis, diabetes and fibromyalgia respectively. A finding indicating that the prevalence of CAM information available may vary depending on the disease state under investigation. Supporting this theory, a higher prevalence of CAM-related web sites was found in a study reviewing online cancer information. Of the 1 121 cancer web pages analysed, 182 (16%) were CAM related.

Consumers were the target audience for the majority of web sites analysed.¹²¹ Of the CAM web page results returned using the search phrases: 'diabetes,' 'arthritis' and 'fibromyalgia'; 98% were aimed at consumers.¹²¹ Most of the web pages had a commercial author (78%), with 69% containing a commercial aspect.

The prevalence of complementary medicines web sites with a commercial aspect was highlighted by a study reviewing online information available for the 8 best-selling herbal products in the United States (year 2000).¹²² Of the 443 web sites analysed, 338 (76%) either sold products or were directly linked to a vendor. Most sites (81%) made one or more claims regarding health. Claims that would require high level evidence using Australian regulations (i.e. claims to treat, prevent or cure) were found on 55% (n = 149) of these sites. Of the 443 web sites, 27% were sponsored.

Internet users are more likely to see complementary medicines information on a sponsored site than a non-sponsored one.¹²⁰ Sponsored sites typically have a fee-based arrangement to be featured prominently by a search engine in response to specific searches.¹²² Sponsored listings are also, generally, prominently displayed at the top of the results page, sometimes along with regular search results.¹²⁰ Given that the sites making health claims are largely commercial in nature and primarily aimed at consumers, it is important to assess the quality of information provided.

Quality of complementary medicines information on the Internet

It has been suggested that assessing the accuracy and quality of complementary medicines web sites poses unique challenges as there is less documented research on the efficacy of products and hence the accuracy of information provided may be harder to test.¹²³ Instead, the majority of studies exploring the quality of online complementary medicines information focus on evaluating web sites using a series of 'technical quality criteria', rather than the accuracy of information provided.^{118,121,123,124}

The Sandvik score was used by two studies to assess the quality of information on CAM web sites.^{118,124} The score is determined by assessing the presence of the following 'technical quality criteria' on a web site: ownership, source, interactivity, balance, authorship, currency and navigability.¹¹⁸ The authors of this validated score define a web site with a score of 0–5 points as 'poor', 6–10 points as 'medium' and 11–14 points as 'excellent' quality. Using this

score the quality of information on 32 CAM web sites focusing on cancer was assessed.¹¹⁸ The mean Sandvik score for all web sites was 10.8 (standard deviation = 1.7). The authors concluded that these results were somewhat reassuring as most of the web sites were of a 'medium' quality. Similar findings were reported in a pilot study reviewing the quality of information on CAM for depression.¹²⁴ The mean Sandvik score for the 14 web sites critiqued was 8.9 (range, 6–12) corresponding to a 'medium' quality rating.

Technical quality criteria covering similar fields to the Sandvik score were used in a study reviewing 43 web sites providing information on herbal medicines for cancer.¹²⁵ The quality of information provided was assessed by reviewing the presence of the following criteria: accuracy*, disclosure, attribution, currency, objectivity and accountability. The sum of the scores of all technical quality criteria could range from 10 to 50, with higher scores indicating better quality. The mean score of the sum of all technical quality criteria was 22.12 (standard deviation = 4.18). Thus, in contrast to the studies using the Sandvik score, the authors concluded that the quality of Internet information on herbs in the treatment of cancer was 'poor'.

Compliance with 15 technical quality criteria were evaluated in a study of 150 web sites providing information on three different herbs.¹²³ The technical quality criteria used could be grouped under the headings: authority, transparency and honesty, currency/updating of information, editorial policy, and others. The authors found most web sites did not comply with the technical quality criteria. On average, a web site complied with 6.3 (standard deviation = 2.6) of the 15 criteria. Only 27% of sites disclosed authorship, 6% mentioned an editorial review process and 36% provided references.

References were one of the criteria explored in a content review of 216 web sites providing complementary medicines information on 'diabetes', 'arthritis' and 'fibromyalgia'.¹²¹ Sites were also reviewed for authorship, audience, purpose, kitemarks (independent indicators of quality) and readability; an overall quality score was not determined. The authors reported that 52% of complementary medicines web pages did not provide references for information that would normally be cited. Of the 216 web sites, 158 (73%) contained information that could be assessed for readability. The mean readability level was found to be at Flesch–Kincaid reading grade 11. This is higher than the grade 8 level recommended for consumer health information.¹²¹ An unexpected finding given that 98% of the sites were aimed at consumers.

The studies reviewed thus far indicate that online complementary medicines information ranges from 'medium' to 'poor' quality. While it is accepted that assessing the accuracy of complementary medicines web site information poses many challenges, particularly where sources are not referenced, it is possible to assess the potential harm of displayed information.^{118,123,125}

The largest study exploring the potential for harm of displayed information scrutinised web sites for the presence of misleading statements likely to cause harm (acts of commission) and for vital information that was missing (acts of omission).¹²³ It evaluated 150 web sites providing information on 'ginseng and cancer', 'ginkgo and memory loss', and 'St John's wort and depression'. Potential harm from omission was more prevalent than from commission (97% vs 25%). Statements that may cause toxicity if acted upon were present in 13% of complementary medicines web sites, while 7% of sites included statements encouraging the avoidance of conventional therapies. Information that may lead to harm from interactions, if the advice was followed, was included in 8% of sites. Most complementary medicines web sites (97%) omitted vital information such as contraindications (89%) and drug interactions (83%).

* Accuracy assessed by whether a description of how a treatment acts on the body to achieve its effect is present.

Summary

The Internet provides easily accessible information on complementary medicines for millions of users worldwide. However, most of the information is commercial in nature and aimed at consumers. Care must be taken when using online complementary medicines information as the quality appears to be variable and, in some instances, has the potential to cause harm.

Books and compendia

Accessibility of complementary medicines information in books and compendia

Given the rapid growth in the use of complementary medicines, it is not surprising that updates and new books are being released in an attempt to meet the demand for information.¹²⁶ Despite availability of texts and compendia on complementary medicines and their reported popularity as information sources^{92,104,105}, difficulties in access have been reported by some healthcare professionals.

A study of the sources of information on CAM used by Australian oncology practitioners found perceptions of accessibility differed by practitioner grouping.¹⁰⁶ Oncologists/haematologists (n = 63), oncology pharmacists (n = 33) and Drug Information Centres (n = 16) were asked about accessibility of CAM books and other resources. Almost 80% of oncologists and Drug Information Centres reported that they were 'very' or 'somewhat satisfied' with access to CAM books. A lower satisfaction rating was recorded for oncology pharmacists, with 61% 'very' or 'somewhat satisfied' with access. Drug Information Centres rated satisfaction with access to CAM books higher than for any other source of information. Comparatively, oncologists reported satisfaction with access to journals and databases higher than satisfaction with access to books.

A survey of pharmacists in New South Wales also reported difficulties in accessing information on complementary medicines.⁹² Questionnaires were sent to 1 500 pharmacists randomly selected from the New South Wales register (484 responded). The authors reported that of the respondents practicing at a site that sold CAM products, 27% did not have access to information on these products or treatments.

When healthcare professionals do have adequate access to books or compendia on complementary medicines, research indicates these resources are not always used. A survey of community pharmacies in New York and New Jersey that serve as experiential sites for student pharmacists was conducted in December 2003.¹²⁷ The 78 respondents were asked to report how frequently they used CAM resources (primarily books): 56% reported that they 'never' or 'seldom' referred to these resources; and 44% reported that they 'often' or 'always' refer to these resources. Although 61% of respondents indicated that they were 'somewhat' or 'completely satisfied' with these resources, 55 pharmacists (71%) reported areas that they would like to see improve in quality.

Quality of complementary medicines information in books and compendia

Three studies in the USA have explored the quality of complementary medicines information in books or compendia.^{99,128,129}

In the first of these, the authors reviewed 22 books focusing on botanical dietary supplements and aimed at healthcare professionals.¹²⁹ Criteria used in the assessments included: credentials of the authors, use of references, balanced presentation of benefits and risks, and perceived usefulness for practicing pharmacists and physicians. The authors reported that the quality and detail of the information presented varied dramatically. Many books were found to contain unsubstantiated statements of fact and/or the information was presented in manner

more favourable than could be supported by the primary literature. Of the 22 books reviewed only 5 met all review criteria:

- *Botanical Dietary Supplements: Quality, Safety and Efficacy*
- *Natural Medicines Comprehensive Database*
- *The Health Professional's Guide to Popular Dietary Supplements*
- *Toxicology and Clinical Pharmacology of Herbal Products*
- *Herbal Medicine: Expanded Commission E Monographs.*

The authors concluded that these could be used as primary reference books for healthcare professionals on botanical dietary supplements.

The second study assessed the ability of seven commonly known herbal reference books and electronic databases to answer questions about herbal products.⁹⁹ Herb-related questions posed by healthcare professionals and consumers were collected from five Drug Information Centres, with 50% of these questions randomly selected for analysis. Questions seeking general herbal information along with advice on drug–herbal interactions, therapeutics, or adverse reactions were used in the analysis (57 in total). The author reported the *Natural Medicines Comprehensive Database* was the most successful in answering questions while *The Natural Pharmacist* and *AltMedDex* (also databases) were the second most successful. The author concluded the four books reviewed in the study to be the least helpful resources.

Similar findings were obtained in a study on the ability of 14 commonly known herbal and dietary supplement references and electronic databases to answer questions.¹²⁸ Questions directed to the University of Michigan Drug Information Centre were reviewed (61 in total). Half of the queries involved requests for drug–herb interaction information, with the remainder primarily requesting information on therapeutics and adverse effects. The three electronic databases assessed received the highest score and hence were deemed the most useful: *Natural Medicines Comprehensive Database*, *AltCareDex* and *The Natural Pharmacist*. Of the remaining resources, all of which were books, *The Natural Therapeutics Pocket Guide* was rated the most useful.

Summary

Despite the reported popularity of books and compendia as information sources^{92,104,105}, limited data indicates that access to these can be a problem for some healthcare professionals. Even when access is not a problem, their variable quality may limit their usefulness when compared with other resources.

Tools for assessing the quality of complementary medicines information

It is clear from this review that complementary medicines information is readily available through the media, journals, the Internet and books. Unfortunately, information provided by these mediums was found to be of variable quality. An ideal situation would be to empower consumers and healthcare professionals to assess the quality of complementary medicines information. A number of tools and techniques to assist them to do so are evident.¹³⁰ Most of those identified relate to the detection of quality information on the Internet.^{118,124,130} Thus, with the Internet as a focus, the effectiveness of these tools in assisting complementary medicines information seekers to detect quality information will be reviewed.

Cooke and Gray provide an overview of the tools and techniques for identifying quality Internet-based health information (Table 2).¹³⁰ Those identified were primarily developed for evaluating general health-related information. The legitimacy of these tools and techniques in assessing the quality of complementary medicines information on the Internet has been questioned.¹³⁰

Table 2: Tools and techniques for identifying quality health information on the Internet^{118,124,130}

Tool or technique	Description^a
BIOME Evaluation Guidelines	Evaluation criteria for identifying quality resources for inclusion in BIOME. Focuses on the coverage of resources, authority and currency. Additional criteria relate to accessibility and ease of use.
DISCERN Instrument	A brief questionnaire designed for use by consumers for evaluating material on treatment choices. Relates to the aims, relevance, basis and potential bias of information, as well as whether a resource provides a balanced view about a range of treatment options.
eHealth Code of Ethics	Produced by the Internet Healthcare Coalition the Code of Ethics covers issues relating to candour, honesty, quality, privacy and professionalism.
European Commission Guidelines	The draft guidance provides advice to producers of information on how to comply with key quality criteria. In addition it aims to educate users as to what to expect from a good quality site.
HON Code of Conduct	Eight ethical principals relating to the provision of health information on the Internet: authority, complementarity, confidentiality, attribution, justifiability, transparency of authorship, transparency of sponsorship, and honesty in advertising and editorial policy.
JAMA Benchmarks	Highlights issues associated with the quality of health information available via the Internet. Proposes a set of standards for the provision of high-quality health-related resources relating to: authorship, attribution, disclosure and currency.
MedCERTAIN	The European funded MedCERTAIN project uses a combination of kitemark and meta-information to indicate the quality of Internet health resources.
Sandvik score	Used to assess quality. The score is determined by the presence or absence of technical quality criteria.

^a Description derived from information provided in citing reference(s).

Difficulties encountered in obtaining consensus, when evaluating the quality of CAM information, led to the questioning of such tools by the United Kingdom expert committee drafting the BIOME Evaluation Guidelines.¹³⁰ BIOME is a collection of gateways to selected evaluated and described Internet resources in health and life sciences.¹³⁰ All resources are evaluated before inclusion in any of the BIOME gateways using the BIOME Evaluation Guidelines.¹³⁰ The guidelines were adapted to allow the assessment of CAM resources for inclusion in the BIOME database and sent to six content providers. Content providers identify, evaluate and describe resources for inclusion in the BIOME database. Providers were asked to assess the guidelines using a sample of 20 web-based materials identified using the search phrase: 'alternative therapies cancer'. Consensus regarding inclusion was reached for only one of the 20 possible web-based materials using the CAM guidelines. All content providers were in agreement on the exclusion of nine sites. There were inconsistencies in the inclusion or exclusion of the remaining resources. The authors concluded that the CAM guidelines do not enable content providers to consistently and reliably decide about the inclusion or exclusion of resources and hence revision and further testing are required.

Difficulties in achieving consensus were also reported in a study using 22 technical quality criteria to review CAM web sites.¹³¹ Two independent reviewers assessed the criteria using a convenience sample of 42 CAM web pages. Agreement between reviewers was tested using the kappa statistic which measures the strength of agreement taking into account agreement that would occur by chance alone.¹³² Initial analysis indicated 10 of the 22 quality criteria had a kappa value of < 0.6, indicating poor agreement. Operational definitions were created for each technical quality criteria to assist agreement. Using the operational definitions, 7 criteria

still had a kappa value of < 0.6 . Criteria that could not be consistently assessed, even with an operational definition, included: disclosure of sponsorship, disclosure of advertising, statement of purpose, links provided, fax number provided and email address provided. The authors concluded that wide variation exists in the level of agreement for technical quality criteria that are the basis of many of the tools to assess information quality. Hence, existing quality rating tools which simply ask the user match the web page against a list of criteria may be difficult to use effectively.

In addition to questions of inter-rater reliability, a study of 150 complementary medicines web sites failed to find a relationship between the use of technical quality criteria and the ability to identify information of high quality.¹²³ Like many of the tools and techniques outlined in Table 2, the 15 criteria covered authority, transparency and honesty, currency, updating of information and editorial policy. The authors reported that individual technical quality criteria did not identify sites with the potential to cause physical harm from commission or omission. Similarly, when technical criteria were grouped into categories (such as authority, transparency and honesty, etc) no significant association was found with potential physical harm. Overall, 44 hypotheses were tested but none were statistically significant, despite the study having adequate power to detect such significance. These findings were in contrast to previous work by the authors looking at information on conventional breast cancer options. The authors concluded that they are 'forced to question the assumption, at least for CAM information, that consumers can be taught to discern good content from bad by looking at domain-independent quality criteria'. As a result, the authors suggest that only known, authoritative providers of information should be used.

In contrast, positive findings were reported when a modified version of the DISCERN tool was used to evaluate the quality and safety of information.¹²⁵ The study reviewed 43 web sites providing complementary medicines information on cancer and found that quality and safety were significantly associated ($r_s = 0.52$, $p < 0.001$). That is, poorer web-based information was associated with lower levels of safety. Another study reviewing 32 web sites providing CAM information for cancer reported two web sites listed the HON code of approval.¹¹⁸ The two web sites received Sandvik scores of 13 and 14 which indicate the quality of information is 'excellent'. However, the small sample size means that no statistical correlation can be investigated.

Summary

Given the accessibility to complementary medicines information of highly variable quality, an ideal would be to empower information seekers with tools or techniques to enable them to evaluate health information. Tools and techniques have been identified for this purpose, primarily for use with Internet information. However, uncertainty exists about the ability of those available to alert complementary medicines information seekers to potentially harmful information. Reviewers of complementary medicines information on the Internet have suggested that only known, authoritative providers of information should be used.

What are consumers' and healthcare professionals' information needs for complementary medicines?

Consumers and healthcare professionals want high quality information on complementary medicines. This need was expressed by consumers in the 2000 SAHOS.⁷ Nearly all of the 3 027 respondents (93%) agreed that packaging of complementary medicines should contain product and user information "of a similar standard and content to the information given with prescription drugs". A survey of 533 pharmacists in the USA provides an example of the need for high quality information by healthcare professionals.⁹³ Almost all respondents (95%) felt the availability of clinical and technical information on herbs or natural products was only 'somewhat adequate' or 'not adequate'. In order to develop relevant high quality information

the specific areas of information required by consumers and healthcare professionals need to be established.

Questions on complementary medicines received by telephone information services are an indirect method of extracting the information needs of consumers and healthcare professionals. One such study was undertaken by the Canadian Cancer Society, which offers a cancer information telephone service (CIS) to all Canadians.¹³³ The study was done at the societies four CIS sites and involved the completion of a questionnaire after each CAM-related telephone call. Over the four-month period of data collection 109 CAM-related calls were recorded. Most callers (81%) requested information on specific CAM topics. The top five topics were: 714X (n = 17), Essiac (n = 16), nutrition (n = 9), overall efficacy (n = 8) and Shark's cartilage (n = 7). Information on drug interactions (n = 1) and general safety (n = 1) were among the remaining 44 CAM topics.

Herbal medicine questions received by five Drug Information Centres in the USA were reviewed in a separate study.⁹⁹ Of the 57 questions reviewed the most commonly requested information by consumers and healthcare professionals could be classified into:

- general information (22 questions)
- interactions (11 questions)
- therapeutics (10 questions)
- side effects (8 questions)
- toxicology (3 questions)
- other (3 questions).

A similar study reviewed 61 questions on herbal and dietary supplements received by the University of Michigan Health System Drug Information Centre.¹²⁸ Half of the queries involved requests for drug-herbal interactions information, the rest were primarily requesting information on therapeutics and adverse effects.

Another indirect method of identifying the information needs of consumers and healthcare professionals is to ascertain knowledge gaps. One such study in the USA evaluated pharmacists' knowledge of complementary medicines.¹³⁴ The study involved pharmacists attending several state and regional meetings from August through to October 1998 completing a survey. The survey included a 15-item herbal medicine knowledge test assessing the uses, adverse effects and cautions of five herbal products. A total of 217 surveys were completed, with 164 meeting inclusion criteria. The mean herbal test score was 6.3 (standard deviation = 3.3) out of a possible 15. Statements on the uses of herbal medicines were more likely to be answered correctly than those on adverse effects or cautions, indicating more information is needed on potential risks associated with use.

Consumers were asked directly about the information they believed was important in making a decision to use herbal supplements in a population-based survey in the USA.¹⁰⁰ The open-ended responses were categorised after data collection. The authors reported responses were well described by the following categories:

- indications (103 mentions)
- side effects (93 mentions)
- content (51 mentions)
- dosage (43 mentions)
- interactions (40 mentions)
- safety (26 mentions)
- clinical trials (25 mentions)
- effectiveness (20 mentions).

Although the survey was distributed nationwide to a random sample of 3 000 consumer households, the ability to extrapolate the results obtained are limited as only 250 questionnaires were returned (9% response rate).

Similar information needs are reported by healthcare professionals. This is highlighted in a survey of 105 community pharmacies in New York and New Jersey.¹²⁷ The 78 respondents were asked about areas where the quality of current resources on complementary medicines could be improved. The following areas were listed:

- safety (73%)
- interactions with drugs/alternative medicines/food and/or diseases (71%)
- uses (69%)
- proven efficacy (66%)
- adverse effects (56%)
- dosing (56%)
- use in special populations (51%)
- product name/synonyms (36%)
- storage conditions (15%).

In addition, respondents reported the most frequently asked questions on complementary medicines relate to: efficacy (52%), adverse reactions (35%), interactions (32%), dosing (28%) and safety (26%).

Although not asked directly, pharmacists surveyed in a separate study also requested information on indications for use, adverse effects and interactions associated with herbal natural products.⁹³ The survey involved distribution of a questionnaire to a random sample of 1 017 pharmacists in the USA. The authors reported that of the 533 pharmacists who responded, many wrote in the comments section of the questionnaire regarding the need for such information.

Views on the adequacy of current CAM information were sought in a survey of Australian naturopaths.¹⁰⁵ Of the 105 respondents, most (76%) reported the available resources describing the benefits of CAM were 'very adequate'. However, over 50% of naturopaths identified five areas where information resources were 'not very adequate'. The areas were:

- interactions of CAM and other medications
- safety of CAM re medical conditions
- adverse effects of CAM
- safety of CAM re pregnancy and breast feeding
- safety of CAM re children.

Summary

Similar information needs were reported by consumers and healthcare professionals, with the following specific areas identified:

- content
- indication
- therapeutics
- efficacy
- dosage
- adverse effects
- interactions
- general safety
- use in special populations
- storage.

How should information on complementary medicines be conveyed?

Consumers are increasingly encouraged to seek information on complementary medicines.^{11,135} Such information includes:

- How it works?
- How effective is it?
- What is the recommended dose or frequency of treatment?
- What are the side effects?
- How much does it cost?

Similarly healthcare professionals are also being encouraged to seek and provide information on complementary medicines.¹³⁶ In the case of doctors, who have a common law obligation to provide information and advice, the Australian Medical Association states:

Practitioners should specifically ask patients about their use of Complementary Medicine and take account of this in the management of conditions...[and] should be sufficiently well informed about Complementary Medicines to be able to provide advice to patients when appropriate.¹³⁶

Despite encouragement for consumers and healthcare professionals to seek information on complementary medicines, little is written on how to convey such information.

The primary source of guidance in conveying information on complementary medicines comes from the World Health Organization (WHO) report *Guidelines on Developing Consumer Information on Proper Use of Traditional, Complementary and Alternative Medicine*.¹¹ Although targeted at consumer information much of the guidance provided also applies to healthcare professionals. The guidelines focus on the development and dissemination of consumer information on CAM, however it is acknowledged that these are not the only steps required in an effective communication strategy.

The guidelines indicate that national and/or local governments have an important role to play in monitoring and supporting the development of consumer information initiatives on complementary medicines.¹¹ Part of this involves encouraging collaboration between key stakeholders to ensure the information provided is relevant and of a high quality. Topics to be considered by such collaborative groups in developing consumer information include:

- General information — being an informed consumer, informing health care providers and CAM practitioners about therapies being used.
- Where to find reliable information — institutions and authorities on CAM, registered CAM practitioners, certain publications and web sites.
- How to identify reliable information — purpose, relevance/accuracy, sources, updated information, objectivity.

In addition, the guidelines suggest that consumer information on individual CAM therapies should address the following areas:

- therapeutic claims and corresponding levels of evidence
- quality
- precautions
- adverse events
- potent and/or toxic therapies
- interactions and contraindications
- posology
- methods of administration
- self-medication
- preparation
- use in children, pregnant or lactating women and the elderly.

The areas identified by the guidelines agree with many of those reported in the previous section reviewing consumer and healthcare professionals complementary medicines information needs.

Separate to the guidelines for developing consumer information the WHO has also provided guidance on the development of information for healthcare professionals through its *WHO Monographs on Selected Medicinal Plants*.¹³⁷ In 1995, the Traditional Medicine Program of the WHO began the extensive task of reviewing the world's scientific literature of commonly used herbal medicines and publishing this information in monographs.⁶¹ The resulting monographs are in two parts. The first includes pharmacopoeial summaries of quality assurance, including a definition, a description of botanical features, geographical distribution, identity tests, purity requirements, chemical assays and a listing of the major chemical constituents.⁶¹ The second part summarises medical uses, pharmacology, contraindications, warnings, precautions, adverse reactions and dosage.⁶¹ Consistent with the WHO guidelines for consumer information, the monographs recommend that medical uses/therapeutic claims are divided into the following:

- uses supported by clinical data
- uses described in pharmacopoeias and in traditional systems of medicine
- uses described in traditional medicine, not supported by experimental or clinical data.

By categorising in this manner, users can quickly ascertain which indications are supported by clinical data.⁶¹

Strategies to convey information on complementary medicines

A multi-strategy approach to convey CAM information is suggested by the WHO.¹¹ The first strategy is the establishment of a CAM information centre.¹¹ It is suggested that the centre would facilitate dissemination of reliable information and could either be part of an independent national research institute or part of an existing health or drug information centre. A similar recommendation was made by the House of Lords Select Committee on Science and Technology in the United Kingdom.¹³⁸ The committee recommended that CAM information be conveyed through NHS Direct, as the NHS was the natural home in the United Kingdom for reliable non-promotional information on all types of health care.¹³⁸

The second strategy aims to facilitate collection and dissemination of CAM adverse effect and interaction information by developing national surveillance centres.¹¹ It is suggested that countries with existing surveillance systems for conventional medicines use these systems. The Australian Adverse Drug Reaction Advisory Committee (ADRAC) has already adapted to this role and receives reports of adverse reactions from complementary medicines.⁹ However, broader promotion of its role in dissemination of information may be required as less than 30% of naturopaths used the Therapeutic Goods Administration web site (of which ADRAC is a component) as a source of information of notification of adverse events.¹⁰⁵

As highlighted previously, the media plays an important role in conveying information on complementary medicines to consumers. The guidelines recognise this role and recommend that the media be used where appropriate to disseminate information.¹¹ To perform this role the guidelines indicate the media must be supplied with reliable information to ensure the message conveyed is appropriate. Regulatory mechanisms should also be in place to ensure CAM-related information disseminated by the media is reliable and promoted in an ethical manner. An example of such regulations is Australia's requirement that all advertisements meet the standards set out in the Therapeutic Goods Advertising Code.^{109,110}

The guidelines suggest that the Internet can be used to convey information to a broad audience.¹¹ The variable quality of information on the Internet is noted with several approaches to ensure the provision of reliable information put forward. These include referral to:

- a web site controlled by national or local authorities
- a web site controlled by an officially approved CAM organisation
- certified web sites where information has been approved
- peer-reviewed web sites.

Workshops and seminars along with educational sessions in schools are also suggested as additional activities by which information on complementary medicines can be conveyed to consumers.

Effectiveness of strategies in influencing behaviour

The WHO believes that conveying information through the strategies outlined will help consumers seek out appropriate types of self-care and, as a result, help them obtain more benefits from complementary medicines and reduce unnecessary risks.¹¹ However, little can be reported on the effectiveness of such strategies in influencing complementary medicines behaviour as only one study addressing this topic was identified in this review.¹⁴

The study explored the influence of a multilayered educational strategy on the behaviour of healthcare professionals.¹⁴ Aimed at increasing recording of complementary medicines in medical records the study targeted medical, nursing and pharmacy staff at a New South Wales hospital. An intensive education program was undertaken together with a series of presentations and distribution of written materials to the target audience. The educational strategies were effective in increasing overall recording by 16% (95% confidence interval 3% to 29%, $p = 0.014$). Despite these improvements, the authors noted that the results obtained are 'unlikely to be sustained over the long term, given the short, intensive nature of the programme'. Hence, further research is required to establish the long-term effectiveness of strategies employed to influence complementary medicines behaviour.

Summary

Multiple strategies are suggested by the WHO to convey CAM information. Establishment of a CAM information centre to facilitate dissemination of reliable information is one such strategy. In addition, using an existing surveillance systems to collect and convey CAM adverse event information is recommended. The Internet and media are also explored as strategies to convey information. Key to all strategies is the dissemination of information of high quality.

Information sources currently available to assist in the development of complementary medicines information

This section aims to provide a list of all primary, secondary and tertiary information resources 'recommended' in the articles reviewed. An information source was considered to be 'recommended' by an author if it was cited favourably in the text or in a table of an article. No additional measures were undertaken to establish the quality of information sources recorded in this section.

Consistent with previous work, the listing is divided into: journals, databases and web sites, and books and compendia.¹²⁶ Some sources fit into more than one category.

Journals

Several journals specifically or regularly address complementary medicines and include original research reports as well as reviews and other features. However, the increasing number of conventional biomedical journals printing occasional articles on complementary medicines, and the expanding number of journals focusing on this topic, makes assembling a comprehensive list of complementary medicine journals difficult.¹³⁹ One approach is to

highlight journals that currently compose the related complementary medicines subset of a journal directory.^{126,139}

Jackson and Kanmaz used *Ulrich's International Periodicals Directory* to obtain journals on the use of herbal medicines or dietary supplements.¹²⁶ The directory categorises journals that address CAM under the subheadings of Alternative Medicine or Medical Sciences. Table 3 to Table 5 list journals identified that regularly address complementary medicines.

Table 3: English language, peer-reviewed journals¹²⁶

Journal title	Date ^a
Alternative Medicine Review	1996
Alternative Therapies in Clinical Practice	1994
Alternative Therapies in Health and Medicine	1995
American Journal of Chinese Medicine	1973
Australian Journal of Medical Herbalism	1989
Australian Traditional Medicine SocietyJournal	1998
British Journal of Phytotherapy	1990
European Journal of Herbal Medicine	1994
Focus on Alternative and Complementary Therapies	1996
Forschende Komplementaermedizin/ Research in Complementary Medicine	1994
HealthInform	1995
Journal of Alternative and Complementary Medicine: Research on Paradigm, Practice and Policy	1993
Journal of Herbal Pharmacotherapy	2001
Journal of Interprofessional Care	1984
Planta Medica	1935

^aFirst year of publication.

Table 4: Non-English language, peer-reviewed journals¹²⁶

Journal title	Language	Date ^a
Hebei Zhongyi/Hebei Traditional Medicine	Chinese	1979
Tijdschrift Voor Integrale Geneeskunde	Dutch	1984
Zhongguo Yaoxue Wenzhai / Chinese Pharmaceutical Abstracts	Chinese (Index in English and Latin)	1982

^aFirst year of publication.

Table 5: Non peer reviewed or peer review status unknown¹²⁶

Journal title	Date ^a
Alternative and Complementary Therapies	1994
Complementary Therapies in Medicine	1993
Complementary Therapies in Nursing and Midwifery	1979
HerbalGram	1979
Phytomedicine	1994

^aFirst year of publication.

Lee used the *National Library of Medicine PubMed database* to obtain journals focusing on CAM.¹³⁹ Journals were identified using terms from the Alternative Medicine Branch of MeSH and names of MEDLINE journals provided by the National Centre for Complementary and Alternative Medicine; 29 journals were identified. Table 6 lists journals identified as referring to complementary medicines using the journal description provided.

Table 6: Complementary medicines journals indexed in PubMed¹³⁹

Journal title	Date^a
Alternative Medicine Review	1996
Alternative Therapies in Health and Medicine	1995
American Journal of Chinese Medicine	1973
American Journal of Homeopathy	1846
BMC Complementary and Alternative Medicine	2001
British Homeopathic Journal	1911
Complementary Therapies in Medicine	1993
Complementary Therapies in Nursing & Midwifery	1995
Fitoterapia	1934
Integrative Cancer Therapies	2002
Integrative Medicine: a Clinician's Journal	1999
Journal of Alternative and Complementary Medicine	1993
Journal of Ethnopharmacology	1979
International Journal of Phytomedicine and Phytopharmacology	1994
Phytotherapy research	1987
Planta Medica	1935

^a First year of publication.

Databases and web sites

For the most part, databases and web sites represent secondary (indexing and abstracting services) and tertiary (reviews and full-text electronic databases) information resources.¹²⁶ A number of databases providing CAM information are available, along with a seemingly endless quantity of web sites. The challenge is to identify those that provide objective, scientific information about complementary medicines.

Overall, 29 articles referred to CAM databases or web sites either in the text of the article or in a table.^{99,126-128,139-163} From these, 113 databases or web sites were identified. Using the description provided, databases or web sites not focusing on complementary medicines were excluded (n = 24). Resources were also excluded if access information was incomplete (n = 5). Of the remaining 84 web sites or databases, 30 were 'cited' by more than one article and are listed in Table 7. A list of the remaining databases and web sites can be found in Appendix II.

Table 7: Databases or web sites cited by more than one article

Database or web site	Description^a	Ref^b
Allied and Complementary Medicine Database (AMED) www.bl.uk/collections/health/amed.html	A database produced by scanning 400 journals for references on complementary therapy, many not indexed by other biomedical sources.	126, 153, 154
Alternative Health News www.altmedicine.com	A news site for medical and CAM information.	141, 146, 150
Alternative Medicine Foundation www.herbmed.org	Provides online monographs of 135 herbal products. Literature based reviews with references.	141, 147, 154, 139, 142, 152
American Botanical Council www.herbalgram.org	Provides access to information on ordering Herbal Gram, The Complete German Commission E Monographs and a herbal education catalogue.	126, 140, 163
American Cancer Society – Complementary and alternative Methods www.cancer.org/docroot/eto/eto_5.asp		139, 162
Bandolier Complementary and Alternative Therapies www.jr2.ox.ac.uk/bandolier/booth/booths/altmed.html	Contains more than 75 summaries regarding the effectiveness of complementary medicines.	140, 145, 151
CAM on PubMed www.nlm.nih.gov/nccam/camonpubmed.html	Allows CAM related journal citations to be located in PubMed.	139, 147, 153, 154
CINAHL (Cumulative Index to Nursing and Allied Health Literature) www.cinahl.com/	Database containing nursing and allied health disciplines literature. Includes some complementary therapy references.	153, 154
CISCOM Database (Centralised Information Service for Complementary Medicines) ^c www.rccm.org.uk/cisc.htm	A database containing 60 000 articles produced by the Research Council of Complementary Medicines in the United Kingdom. The Research Centre has currently suspended its activities.	126, 149, 153, 154
Complementary Medicine Programme Database ^c www.compmcd.ummc.umaryland.edu/default.htm		139, 154
EMbase www.embase.com	A biomedicine and pharmacology database that includes difficult to locate information about herbs.	139, 141, 153
Federal Drug Administration www.fda.gov	The Federal Drug Administration regulates dietary supplements in the United States and is responsible for taking action against any unsafe dietary supplement product after it reaches the market. Site includes recalls and safety alerts.	126, 139, 152, 163
Healthworld www.healthy.net	Provides information on CAM in cancer as well as general information.	141, 148, 162
Hom-Inform information service ^c http://hominofrm.soutron.com/homqbel.asp	Contains 17 000 references based on contents of Faculty of Homeopathy Library based at Glasgow Homoeopathic Hospital.	149, 154

Table 7: Databases or web sites cited by more than one article (continued)

Database or web site	Description^a	Ref^b
Intergrative Medicine Service at Memorial Sloan-Kettering Cancer Centre www.mskcc.org/about/herbs	Provides details on 135 herbal and botanical agents.	140, 159
International Bibliographic Information on Dietary Supplements (IBIDS) http://dietary-supplements.info.nih.gov/databases/ibids.html	A database of published scientific literature on dietary supplements, including vitamins, minerals and botanicals.	126, 139, 142, 145, 155
Internet resources: Alternative Medicine Resources www.pitt.edu	A directory provided by the Falk Library of the Health Sciences, University of Pittsburgh, which includes links to alternative medicine organisations, databases and government resources.	139, 146
Manual, Alternative and Natural Therapy (MANTIS) www.healthindex.com	A database that provides coverage for health care disciplines not significantly represented in the major biomedical databases (e.g. Chinese medicine and naturopathy).	139, 153
Mayo Clinic. Complementary and Alternative Therapy Centre http://www.mayoclinic.com		147, 152
MD Anderson Cancer Centre, University of Texas www.mdanderson.org/departments/CIMER/	Provides reviews of complementary or alternative cancer therapies as well as links to other authoritative resources.	139, 145, 156, 162
Medline www.ncbi.nlm.nih.gov	Provides access to abstracts from a small number of CAM speciality journals.	141, 153
Micromedex / AltMedDex www.micromedex.com	Provides online monographs of herbal and non-herbal products.	99, 126-128, 139, 141, 143
NAPRALERT (Natural Products Alert) http://info.cas.org/ONLINE/DBSS/napralertss.html	A database containing 125 000 entries on natural products used worldwide, including chemical, pharmacologic and ethnomedical information.	126, 139
National Cancer Institute http://www3.cancer.gov/occam/	Web site of the Office of Cancer Complementary and Alternative Medicine which was established to coordinate and enhance the activities of the National Cancer Institute in the arena of CAM.	139, 153, 156, 162
National Centre for Complementary and Alternative Medicine http://nccam.nih.gov	A United States government site that is designed for both consumers and healthcare professionals. Access to the CAM Citation Index is provided.	126, 127, 139, 140, 142, 145-152, 162, 163
The Cochrane Library www.update-software.com/cochrane/	Contains over 5 000 reports of randomised controlled trials and over 60 systematic reviews on complementary therapies.	126, 139, 142, 144, 145, 147, 153, 154

Table 7: Databases or web sites cited by more than one article (continued)

Database or web site	Description ^a	Ref ^b
The Natural Medicines Comprehensive Database www.naturaldatabase.com	Provides literature-based reviews of more than 1 000 herbal products and supplements.	99, 126, 128, 139-144
The Natural Pharmacist ^c www.tnp.com	Provides literature-based reviews of more than 400 herbal products and supplements.	99, 126, 128, 140, 142, 145, 146
Rosenthal Centre for CAM – Columbia University www.rosenthal.hs.columbia.edu	Provides information regarding research and practice of CAM in women’s health and geriatrics.	139, 145
WHO monographs www.who.int/en/		140, 147

^a Description derived from information provided in citing reference(s).

^b Ref = Reference(s).

^c Link cited no longer functional.

Books and Compendia

Despite the popularity, speed and timeliness of electronic databases and web sites, books and compendia are often consulted first by healthcare professionals when faced with a question about complementary medicines.¹²⁶

CAM books or compendia were referred to either in the text of the article or in a table in 14 articles.^{99,126-129,140-143,148,152,162,164,165} From these, 51 books or compendia were identified.

Using the description provided, books or compendia not focusing on complementary medicines were excluded (n = 4). Of the remaining 47 books or compendia, 18 were ‘cited’ by more than one article and are listed in Table 8. A list of the remaining books or compendia can be found in Appendix III.

Table 8: Books or compendia cited by more than one article

Textbook or Compendia	Description ^a	Ref ^b
Barnes J, Andersen LA, Phillipson JD. Herbal medicines. 2nd edn. London: Pharmaceutical Press, 2002.	A compilation of literature searches.	140, 141
Bisset NG. Herbal drugs and phytopharmaceuticals. A handbook for practice on a scientific basis. London: Medpharm GmbH Scientific Publishers, 1994.	Contains 181 detailed monographs each including references, herb sources, synonyms, constituent indications, side effects, commercially available products and information on authentication.	126, 165
Blumenthal M, Brinckmann J, Goldberg A, et al. Herbal Medicine: Expanded Commission E monographs. Austin, US: American Botanical Council, 2000.	Herbal monographs including overviews and descriptions, information on chemistry and pharmacology, uses, contraindications, adverse effects, use in pregnancy and lactation, interactions, dosage and administration data.	126, 127, 141-143
Blumenthal M, ed. The complete German Commission E monographs; therapeutic guide to herbal medicines. Austin, US: American Botanical Council, 1998.	Compilation of German government documents containing 380 abbreviated herbal monographs.	99, 127, 143, 165

Table 8: Books or compendia cited by more than one article (continued)

Textbook or Compendia	Description^a	Ref^b
Brinker F, Stodart N. Herb contraindications and drug interactions. 2nd edn. Sandy, US: Eclectic Medical Publications, 1999.	Short summaries of herbal and non-herbal contraindications and interactions.	141, 143
DerMarderosian A, Beutler JA. The review of natural products. Facts and comparisons. St Louis: Wolters Kluwer Health Inc, 2005.	Formally known as the Lawrence Review of Natural Products. Contains herbal and non-herbal monographs with scientific and common names; botanical, historical, chemical, pharmacologic and toxicologic information and summaries.	99, 126, 127, 140, 142, 143, 164
De Smet PAGM, Keller K, Hansel R, Chandler RG, eds. Adverse effects of herbal drugs (Volumes 1-3) New York: Springer-Verlag, 1997.	Contains herbal monographs which provide a review of the herbs botany, chemistry, pharmacology, pharmacokinetics, clinical uses and adverse reaction profile.	126, 165
Ernst E, ed. The desktop guide to complementary and alternative medicine - an evidence-based approach. Edinburgh: Mosby, 2002.	Focuses on herbal and nutritional medicine. Scientific information with concise reviews. Includes CD-ROM.	140, 141
Fetrow CW, Avila JR. Professional's handbook of complementary and alternative medicines. 4th edn. Philadelphia: Lippincott, Williams & Wilkins, 2003.	Herbal and non-herbal monographs with common and trade names, common forms, sources, chemical components, actions, reported uses, dosages, adverse effects, interactions, contraindications, precautions, special considerations, points of interest and analyses.	129, 140, 141, 143
Fleming T, ed. PDR for herbal medicines. 2nd edn. Montvale, US: Medical Economics, 2000.	Herbal monographs with trade names, descriptions, mechanisms of action, pharmacology, uses, contraindications, precautions, adverse effects, dosage and overdose information and references.	99, 126, 127, 143, 152
Foster S, Tyler VE. Tyler's Honest Herbal: a sensible guide to the use of herbs and related remedies. 4th edn. Binghamton, US: Haworth Herbal, 1999.	Provides information on botanical source of herbal supplements, folk uses, safety, therapeutic effectiveness and references.	99, 126, 143
Grievies M. A Modern Herbal. Harmondsworth, UK: Penguin Books, 1984.	Traditional information – includes some botanical information.	141, 148
Hendler S, Rorvik D, eds. PDR for Nonprescription drugs and Dietary Supplements. 20th edn. Montvale, US: Medical Economics Company, 1999.	Contains reviews of a variety of nutritional supplements available in the United States.	126, 141
McGuffin M, Hobbs C, Upton R, Goldberg A, eds. American Herbal Products Association's botanical safety handbook. Boca Raton, Fla: CRC Press, 1997.	Provides safety data on more than 600 commonly sold herbs in the form of guidelines for safe use and labelling of herbs in commerce.	126, 164
Miller LG, Murray WJ, eds. Herbal medicinals: a clinician's guide. New York: Pharmaceutical Products, 1998.	Uses a case-based approach to illustrate clinical issues that should be considered when using herbs for specific disease states or medical conditions.	126, 143
Newall CA, Anderson LA, Phillipson JD. Herbal medicines: A guide for health-care professionals. London: The Pharmaceutical Press, 2002.	Contains monographs of 141 herbs.	126, 165

Table 8: Books or compendia cited by more than one article (continued)

Textbook or Compendia	Description^a	Ref^b
Roberts JE, Tyler VE. Tyler's Herbs of Choice: The therapeutic use of phytomedicinals. Binghampton, US: Haworth Herbal, 1999.	Provides descriptions of the pharmacology, bioactive constituents, use, dosing, safety and precautions of use for a number of herbs.	126, 142, 165
Schulz V, Hansel R, Tyler VE. Rational phytotherapy: a physicians guide to herbal medicine. 4th edn. Berlin: Springer, 2001.	Herbal therapy textbook with chapters arranged by organ system, containing detailed information on specific herbs.	126, 143, 164

^a Description derived from information provided in citing reference(s).

^b Ref = Reference(s).

Appendix I

The search strategies used by NPS to identify articles in MEDLINE, MEDLINE (In-Progress & Other Non-indexed Citations), EMBASE, CINAHL and AUSTHealth (INFORMIT) are listed below.

MEDLINE

1. alternative medicine\$.mp. or exp Complementary Therapies/
2. herbal medicine\$.mp. or exp Medicine, Herbal/
3. complementary medicine\$.mp.
4. 1 or 2 or 3
5. exp Information Centers/ or exp Information Services/ or exp Drug Information Services/ or exp Patient Education/
6. exp Health Education/ or exp Health Knowledge, Attitudes, Practice/
7. 5 or 6
8. 4 and 7

MEDLINE (In-Process & Other Non-Indexed Citations)

1. ((alternative or complementary or herbal) and medicine\$).mp. [mp=title, original title, abstract, name of substance word]
2. (patient or information or education or attitude\$ or preference\$ or practice\$).mp. [mp=title, original title, abstract, name of substance word]
3. 1 and 2

EMBASE

1. alternative medicine\$.mp. or exp Alternative Medicine/
2. herbal medicine\$.mp. or exp Herbal Medicine/
3. complementary medicine\$.mp.
4. 1 or 2 or 3
5. exp Drug Information/
6. exp Patient Education/
7. exp INTERNET/ or internet.mp.
8. exp Access to Information/
9. exp Medical Information System/
10. exp PHYSICIAN ATTITUDE/ or exp HEALTH PERSONNEL ATTITUDE/ or exp PATIENT ATTITUDE/ or exp ATTITUDE/ or exp NURSE ATTITUDE/ or attitudes.mp.
11. preference\$.mp. or exp DRUG PREFERENCE/
12. 5 or 6 or 7 or 8 or 9 or 10 or 11
13. 4 and 12

CINAHL

1. alternative medicine\$.mp. or exp Alternative Therapies/
2. exp Medicine, Herbal/
3. complementary medicine\$.mp. or exp Alternative Therapies/
4. 1 or 2 or 3
5. exp Drug Information/
6. exp EDUCATION, ALLIED HEALTH/ or exp PATIENT EDUCATION/ or exp EDUCATION/ or exp EDUCATION, HEALTH INFORMATION MANAGEMENT/
7. exp Consumer Health Information/ or medical information.mp. or exp Information Resources/ or exp Health Information/
8. (attitude\$ or preference\$ or practice\$).mp. [mp=title, subject heading word, abstract, instrumentation]
9. 5 or 6 or 7 or 8
10. 4 and 9

AUSTHealth (INFORMIT)

- Search #1 medicine* and (alternative or herbal or complementary)
- Search #2 attitude* or preference* or practice* 40948
- Search #4 (drug or medicine or patient) and information 6223
- Search #6 #4 OR #2 45570
- Search #7 #6 AND #1 517

Appendix II

CAM databases or web sites were referred either in the text of the article or in a table in 29 articles^{99,126-128,139-163}, from these 113 databases or web sites were identified. Using the description provided, databases or web sites not focusing on complementary medicines were excluded (n = 24). Resources were also excluded if access information was incomplete (n = 5). Of the remaining 84 web sites or databases, 30 were 'cited' by more than one article and are listed in Table 7. The remaining 54 databases or web sites are listed in Table 9.

Table 9: Databases or web sites cited by one article

Databases or web sites	Ref ^a
The Longwood Herbal Taskforce – www.mcp.edu/herbal/	140
Association of Natural Medicine Pharmacists – www.anmp.org/monogrpahs.htm	140
eCAM – http://ecam.oxfordjournals.org/	140
Botanical Pathways – www.botanicalpathways.com	140
FullText Clinicals Health Channel Journals@Ovid – http://gateway.ovid.com/	141
Health and Medical Complete – http://proquest.umi.com/login	141
Healthnotes – www.gnc.com/healthnotes	141
IMgateway – www.imgateway.net	141
Medscape – www.medscape.com	141
Nutrition Arbor – www.arborcom.com	141
Phytochemical Database – www.ars-grin.gov/duke/	141
Phytotherapies – www.phytotherapies.org	141
Science Direct – www.sciencedirect.com	141
Sources of Alternative Medicines (SAM) – www.natmedia.com.au	141
AGRICOLA (AGRICultural OnLine Access) – www.nal.usda.gov/ag98	153
NHS Centre for Reviews and Dissemination – http://www.york.ac.uk/inst/crd/	154
Herbal Medicine Internet Resources – www.holisticmed.com/www/herbalism.htm	147
Herb Research Foundation – www.herbs.org	147
http://www.medherb.com	148
http://www.sbherbals.com	148
http://www.algy.com	148
Institute of Information on Traditional Chinese Medicine – www.cintcm.com	149
www.bewell.com	150
www.discoverherbs.com	150
British Columbia Cancer Agency Unconventional Cancer Therapies – www.bccancer.bc.ca/uct	162
CancerGuide Material on Alternative Therapies – http://cancerguide.org/alternative.html	162
Duke University Medical Centre and Cancer Centre of Santa Barbara: A Cancer Patient's Guide to Complementary and Alternative Medicine – http://www.dukehealth.org/Services/Cancer/PatientEducationcam.asp	162
American Holistic Nurses Association – http://www.ahna.org	163
The Pulse of Oriental Medicine – http://www.pulsemed.org/noframes4.htm	157
Traditional Chinese Medicine Basics – http://www.tcmbasics.com	157

Table 9: Databases or web sites cited by one article (continued)

Databases or web sites	Ref^a
Chinese Medicine Library – http://www.hkbu.edu.hk/libcm/index.html	157
The Hong Kong University of Science and Technology – http://library.ust.hk/guides/tcm/tcm-home.html	157
Rocky Mountain Herbal Institute Herbalist Review – http://www.rmhiherbal.org/review/2003-3.html	157
University of Texas Medical Branch – Alternative and Integrative Health Care Program – http://atc.utmb.edu/altmed	145
HolisticKids.org – http://www.holistickids.org	158
Harvard Medical School/IntelliHealth. Index of Herbal Medicines and Supplements, Complementary and Alternative Medicine – http://www.intelihealth.com/IH .	152
University of Michigan Health System. Herbal Medicines – http://www.med.umich.edu	152
Cancer Source Complementary and Integrative Therapies – http://cil.cancersource.com	139
University of Illinois of Chicago, College of Pharmacy: Herbal Medicines: What Works, What doesn't – http://www.uic.edu/pharmacy/research/diet/content/articles/webhandout.doc	152
Center for Botanical Dietary Supplement Research in Women's Health – http://www.uic.edu/pharmacy/research/diet/content/scont_womens_health_ginko.htm	152
Health World Online – Alternative Medicine Centre – www.altmed.net	146
Ask NOAH About: Alternative (Complementary Medicine) – www.noahhealth.org/english/alternative/alternative.html	146
Whole Health MD.com – www.wholehealthmd.com	146
OnHealth Network Company – http://onhealth.webmd.com/alternative/home/index,5.asp	146
http://www.factsandcomparisons.com/	139
Natural Standard – http://www.naturalstandard.com	139
Federal Trade Commission – http://www.ftc.gov	139
Consumer Labs – http://www.consumerlab.com/	139
Oncology nursing society – http://www.ons.org	139
Duke Comprehensive Cancer Centre – http://cancer.duke.edu/pated/CAM.asp	139
The Johns Hopkins Centre for Complementary and Alternative Medicine – http://www.hopkinsmedicine.org/CAM/links.html	139
University of Virginia Cancer Centre complementary Cancer Care Program – http://www.healthsystem.virginia.edu/internet/cancer/choicesinhealing.cfm	139
Combined Health Information Database – http://www.chid.nih.gov/	139
UpToDate – http://www.uptodate.com	139

^a Ref = Reference.

Appendix III

CAM books or compendia were referred to either in the text of the article or in a table in 14 articles.^{99,126-129,140-143,148,152,162,164,165} From these, 51 books or compendia were identified.

Using the description provided, books or compendia not focusing on complementary medicines were excluded (n = 4). Of the remaining 47 books or compendia, 18 were 'cited' by more than one article and are listed in Table 8. The remaining 29 books or compendia are listed in Table 10.

Table 10: Books or compendia cited by one article

Books and compendia	Ref^a
Blumenthal M, ed. The ABC clinical guide to herbs. Austin, US: American Botanical Council, 2003.	140
Boon H, Smith M. The Botanical Pharmacy. Toronto: Quarry Press, 1999.	165
Bratman S, Kroll D. Natural Health Bible. 2nd edn. Rocklin, US: Prima Health, 2000.	141
Bratman S, Kroll D. Clinical Evaluation of Medicinal Herbs and Other Therapeutic Natural Products. Rockland, US: Prima Health Publishing, 2000.	126
Braun L, Cohen M. Herbs and Natural Supplements – an evidence based guide. Sydney: Elsevier, 2005.	140
Chemiak P, Chemiak N. Alternative medicine for the elderly. New York: Springer, 2003.	140
Cupp MJ, ed. Toxicology and clinical pharmacology of herbal products. Totowa, US: Humana Press, 2000.	129
European Scientific Cooperative on Phytotherapy. Monographs on the medicinal uses of plant drugs, 1997.	165
Fisher C, Painter G. Materia Medica for the Southern Hemisphere. New Zealand: Painter Publishers, 1996	141
Forget L, Goldrosen J. Hart JA et al, eds. Herbal companion to AHFS DI. Bethesda, MD: American Society of Health Systems Pharmacists; 2000.	143
Fugh-Berman A. The 5-minute herb and dietary supplement consult. Philadelphia: Lippincott Williams & Wilkins, 2003.	140
Harkness R, Bratman S. Mosby's Handbook of Drug-Herb and Drug-Supplement Interactions. St Louis: Mosby, Elsevier Science, 2003.	141
Herr SM. Herb-drug interaction handbook. New York: Church Street Books; 2000.	143
Hoffman D. The New Holistic Herbal. Shaftesbury, UK: Element Books, 1990.	141
Huang KC. The Pharmacology of Chinese Herbs. 2nd edn. New York: CRC Press, 1999.	126
Lavalle JB, Krinsky DL, Hawkins EB, et al, eds. Natural therapeutics pocket guide, 2000-2001. Hudson, US: Lexi-Comp and Natural Health Resources, 2000.	129
Lerner M. Choices in healing: integrating the best of conventional and complementary approaches to cancer. MIT Press, 1996.	162
Liningner SW, ed. A-Z Guide to Drug-Herb-Vitamin interactions. Rocklin, US: Prima Lifestyles, 1999.	141
Mahady G, Fong H, Farnsworth N, eds. Botanical dietary supplements: Quality, safety and efficacy. Lisse, the Netherlands: Swets & Zeitlinger, 2000.	129
Mills S. The Essential Book of Herbal Medicine. London: Arkana, Penguin, 1993.	141
Mills S, Bone K. Principles and Practice of Phytotherapy. Edinburgh: Churchill Livingstone, Harcourt Publishing, 2000.	141
Murray M. The Healing Power of Herbs. Rocklin, US: Prima Health, 1995.	141

Table 10: Books and compendia cited by one article (continued)

Books and compendia	Ref^a
Newton US. Professional Guide to Conditions, Herbs and Supplements. Integrative Medicine Communications, 2000.	141
Pelton R, Lavalle JB, Hawkins EB, Krinsky DL. Drug-induced nutrient depletion handbook 1999-2000. Hudson, US: Lexi-Comp Inc, Natural Health Resources Inc, 2001.	141
Sarubin A. The Health Professionals Guide to popular dietary supplements. Chicago, US: American Dietetic Association, 2000.	129
Shils M, ed. Modern Nutrition in Health and Disease. 9th edn. Baltimore, US: Williams and Wilkins, 2000.	141
Skidmore-Roth L. Mosby's Handbook of Herbs and Natural Supplements. St Louis, US: Mosby, 2001.	141
Wahlqvist ML, ed. Food and nutrition. Sydney: Allen & Unwin, 2002.	141
WHO monographs on selected medicinal plants. Geneva: World Health Organization; 1999.	143

^a Ref = Reference.

References

1. Cohen MM. CAM practitioners and "regular" doctors: is integration possible? *Med J Aust* 2004;180:645–6.
2. MacLennan AH, Myers SP, Taylor AW. The continuing use of complementary and alternative medicine in South Australia: costs and beliefs in 2004. *Med J Aust* 2006;184:27–31.
3. Pirotta MV, Cohen MM, Kotsirilos V, Farish SJ. Complementary therapies: have they become accepted in general practice? *Med J Aust* 2000;172:105–9.
4. Cumming FJ. Complementary medicines regulation in Australia. *Curr Ther* 2000;41:57–8, 60–1.
5. Wohlmuth H, Oliver C, Nathan PJ. A review of the status of Western herbal medicine in Australia. *J Herb Pharmacotherapy* 2002;2:33–46.
6. Expert Committee on Complementary Medicines in the Health System. Complementary medicines in the Australian Health System. Canberra: Commonwealth of Australia 2003:<http://www.tga.gov/docs/pdf/cmreport.pdf> (accessed 23 July 06).
7. MacLennan AH, Wilson DH, Taylor AW. The escalating cost and prevalence of alternative medicine. *Prev Med* 2002;35:166–73.
8. Therapeutic Goods Regulation 1990. Office of Legislative Drafting and Publishing, Attorney General's Department, Canberra. 5 June 2006.
9. Shenfield GN. What should we be doing about complementary therapies? *Curr Ther* 1999;40:7–8, 10–1.
10. Leach MJ. Public, nurse and medical practitioner attitude and practice of natural medicine. *Complement Ther Nurs Midwifery* 2004;10:13–21.
11. World Health Organization. Guidelines on Developing Consumer Information on Proper Use of Traditional, Complementary and Alternative Medicine. Italy: World Health Organisation; 2004.
12. Rivera JO, Anaya JP, Meza A. Herbal product use in Mexican-Americans. *Am J Health Syst Pharm* 2003;60:1281–2.
13. Taylor DM, Walsham N, Taylor SE, Wong L. Use and toxicity of complementary and alternative medicines among emergency department patients. *Emerg Med Australasia* 2004;16:400–6.
14. Cockayne NL, Duguid M, Shenfield GM. Health professionals rarely record history of complementary and alternative medicines. *Br J Clin Pharmacol* 2005;59:254–8.
15. Cincotta DR, Crawford NW, Lim A, et al. Comparison of complementary and alternative medicine use: reasons and motivations between two tertiary children's hospitals. *Arch Dis Child* 2006;91:153–8.
16. Biddle RA, Wilkinson JM, Simpson MD. Do Australian women use complementary medicines for reproductive conditions? *Aust Pharm* 2003;22:52–6.
17. Graffen M, Kennedy D, Simpson M. Quality use of medicines in the rural ambulant elderly: a pilot study. *Rural and Remote Health* 4 (online) 2004;184 Available from: <http://rrh.deakin.edu.au>.
18. Lentile CS, Sorensen L, Lemanski L, Roberts MS. Complementary medicines use by Australian veterans. *J Pharm Pract Res* 2005;35:110–1.
19. Clifford RM, Batty KT, Davis W, Davis TM. Prevalence and predictors of complementary medicine usage in diabetes: Fremantle Diabetes Study. *J Pharm Pract Res* 2003;33:260–4.
20. de Visser R, Grierson J. Use of alternative therapies by people living with HIV/AIDS in Australia. *AIDS Care* 2002;14:599–606.
21. Correa-Velez I, Clavarino A, Barnett AG, Eastwood H. Use of complementary and alternative medicine and quality of life: changes at the end of life. *Palliat Med* 2003;17:695–703.

22. Steginga SK, Occhipinti S, Gardiner RA, et al. A prospective study of the use of alternative therapies by men with localized prostate cancer. *Pat Educ Couns* 2004;55:70–7.
23. Kristoffersen SS, Atkin PA, Shenfield GM. Use of alternative medicines on Sydney's North Shore. *Aust J Hosp Pharm* 1997;27:367–72.
24. Welch SA. The use of complementary medicines by inpatients at St Vincent's Hospital Sydney. *Aust J Hosp Pharm* 2001;31:111–3.
25. Grauer RP, Thomas RD, Tronson MD, et al. Preoperative use of herbal medicines and vitamin supplements. *Anaesth Intensive Care* 2004;32:173–7.
26. Lim A, Cranswick N, Skull S, South M. Survey of complementary and alternative medicine use at a tertiary children's hospital. *J Paed Child Health* 2005;41:424–7.
27. Harris P, Rees R. The prevalence of complementary and alternative medicine use among the general population: a systematic review of the literature. *Complement Ther Med* 2000;8:88–96.
28. MacLennan AH, Wilson DH, Taylor AW. Prevalence and cost of alternative medicine in Australia. *Lancet* 1996;347:569–73.
29. Eisenberg DM, Davis RB, Ettner SL, et al. Trends in alternative medicine use in the United States, 1990–1997: results of a follow-up national survey. *JAMA* 1998;280:1569–75.
30. Sirois FM, Gick ML. An investigation of the health beliefs and motivations of complementary medicine clients. *Soc Sci Med* 2002;55:1025–37.
31. Thomas K, Nicholl JP, Coleman P. Use and expenditure on complementary medicine in England: a population based survey. *Complement Ther Med* 2001;9:2–11.
32. Emslie MJ, Campbell MK, Walker KA. Changes in public awareness of, attitudes to, and use of complementary therapy in North East Scotland: surveys in 1993 and 1999. *Complement Ther Med* 2002;10:148–53.
33. Shumay DM, Maskarinec G, Gotay CC, et al. Determinants of the degree of complementary and alternative medicine use among patients with cancer. *J Altern Complement Med* 2002;8:661–71.
34. Alderman CP, Kiepfer B. Complementary medicine use by psychiatry patients of an Australian hospital. *Ann Pharmacother* 2003;37:1779–84.
35. Shenfield G, Lim E, Allen H. Survey of the use of complementary medicines and therapies in children with asthma. *J Paed Child Health* 2002;38:252–7.
36. Wilkinson JM, Simpson MD. High use of complementary therapies in a New South Wales rural community. *Aust J Rural Health* 2001;9:166–71.
37. Wilkinson JM, Simpson MD. Complementary therapy use by nursing, pharmacy and biomedical science students. *Nurs Health Sci* 2001;3:19–27.
38. Parvathy M, Sibbritt DW, Adams J. The use of herbal medicines for the treatment of menopausal symptoms. A pilot study of women attending general practice. *Aust Fam Physician* 2004;33:955–6.
39. Parslow RA, Jorm AF. Use of prescription medications and complementary and alternative medicines to treat depressive and anxiety symptoms: results from a community sample. *J Affect Disord* 2004;82:77–84.
40. Harnack LJ, Rydell SA, Stang J. Prevalence of use of herbal products by adults in the Minneapolis/St Paul, Minn, metropolitan area. *Mayo Clin Proc* 2001;76:688–94.
41. Martin KJ, Jordan TR, Vassar AD, White DB. Herbal and nonherbal alternative medicine use in Northwest Ohio. *Ann Pharmacother* 2002;36:1862–9.
42. King MO, Pettigrew AC. Complementary and alternative therapy use by older adults in three ethnically diverse populations: a pilot study. *Geriatr Nur* 2004;25:30–7.
43. Eng J, Ramsum D, Verhoef M, et al. A population-based survey of complementary and alternative medicine use in men recently diagnosed with prostate cancer. *Integr Cancer Ther* 2003;2:212–6.

44. Gollschewski S, Anderson D, Skerman H, Lyons-Wall P. The use of complementary and alternative medications by menopausal women in South East Queensland. *Womens Health Issues* 2004;14:165–71.
45. Sinha D, Efron D. Complementary and alternative medicine use in children with attention deficit hyperactivity disorder. *J Paed Child Health* 2005;41:23–6.
46. Correa-Velez I, Clavarino A, Eastwood H. Surviving, relieving, repairing, and boosting up: reasons for using complementary/alternative medicine among patients with advanced cancer: a thematic analysis. *J Palliat Med* 2005;8:953–61.
47. Boon H, Brown JB, Gavin A, Westlake K. Men with prostate cancer: making decisions about complementary/alternative medicine. *Med Decis Making* 2003;23:471–9.
48. Chang BL, van Servellen G, Lombardi E. Factors associated with complementary therapy use in people living with HIV/AIDS receiving antiretroviral therapy. *J Altern Complement Med* 2003;9:695–710.
49. Hana G, Bar-Sela G, Zhana D, et al. The use of complementary and alternative therapies by cancer patients in northern Israel. *Isr Med Assoc J* 2005;7:243–7.
50. Pud D, Kaner E, Morag A, et al. Use of complementary and alternative medicine among cancer patients in Israel. *Eur J Oncol Nurs* 2005;9:124–30.
51. Sawyer MG, Gannoni AF, Toogood IR, et al. The use of alternative therapies by children with cancer. *Med J Aust* 1994;160:320–2.
52. Hyodo I, Amano N, Eguchi K, et al. Nationwide survey on complementary and alternative medicine in cancer patients in Japan. *J Clin Oncol* 2005;23:2645–54.
53. Ambrose ET, Samuels S. Perception and use of herbals among students and their practitioners in a university setting. *J Am Acad Nurs Practit* 2004;16:166–73.
54. Jonas WB. Advising patients on the use of complementary and alternative medicine. *Appl Psychophysiol Biofeedback* 2001;26:205–14.
55. Gaffney L, Smith C. The views of pregnant women towards the use of complementary therapies and medicines. *Birth Issues* 2004;13:43–50.
56. Siahpush M. Postmodern values, dissatisfaction with conventional medicine and popularity of alternative therapies. *J Sociology* 1998;34:58–70.
57. Siahpush M. Why do people favour alternative medicine? *Aust NZ J Public Health* 1999;23:266–71.
58. O'Callaghan FV, Jordan N. Postmodern values, attitudes and the use of complementary medicine. *Complement Ther Med* 2003;11:28–32.
59. Siahpush M. Postmodern attitudes about health: a population-based exploratory study. *Complement Ther Med* 1999;7:164–9.
60. Lloyd P, Lupton D, Wiesner D, Hasleton S. Choosing alternative therapy: an exploratory study of sociodemographic characteristics and motives of patients resident in Sydney. *Aust J Public Health* 1993;17:135–44.
61. Barrett B, Marchand L, Scheder J, et al. Bridging the gap between conventional and alternative medicine. *J Fam Pract* 2000;49:234–9.
62. Singh H, Maskarinec G, Shumay DM. Understanding the motivation for conventional and complementary/alternative medicine use among men with prostate cancer. *Integr Cancer Ther* 2005;4:187–94.
63. Greenfield S, Coghill J, Gwatkin T. Use of and attitudes towards herbal medicine among patients in Belize. *Aust J Med Herb* 2005;17:82–9.
64. Hedderson MM, Patterson RE, Neuhouser ML, et al. Sex differences in motives for use of complementary and alternative medicine among cancer patients. *Altern Ther Health Med* 2004;10:58–64.
65. Mackenzie G, Parkinson M, Lakhani A, Pannekoek H. Issues that influence patient/physician discussion of complementary therapies. *Patient Educ Couns* 1999;38:155–9.

66. Huber R, Koch D, Beiser I, et al. Experience and attitudes towards CAM – a survey of internal and psychosomatic patients in a German university hospital. *Altern Ther Health Med* 2004;10:32–6.
67. Biddle RA, Simpson MD, Wilkinson JM. Survey of women's attitudes to complementary medicines. *J Pharm Pract Res* 2003;33:55–8.
68. Sand-Jecklin K, Hoggatt B, Badzek L. Know the benefits and risks of using common herbal therapies. *Holistic Nurs Pract* 2004;18:192–8.
69. Balneaves LG, Kristjanson LJ, Tataryn D. Beyond convention: describing complementary therapy use by women living with breast cancer. *Patient Educ Couns* 1999;38:143–53.
70. Fong DPS, Fong KS. Usage of complementary medicine among children. *Aust Fam Physician* 2002;31:388–91.
71. Li JZ, Quinn JV, McCulloch CE, et al. Patterns of complementary and alternative medicine use in ED patients and its association with health care utilization. *Am J Emerg Med* 2004;22:187–91.
72. Chen YF, Chang JS. Complementary and alternative medicine use among patients attending a hospital dermatology clinic in Taiwan. *Int J Dermatol* 2003;42:616–21.
73. Cheetham PJ, Le Monnier KJ, Brewster SF. Attitudes and use of alternative therapies in UK prostate cancer patients – Isn't it time we were in the know? *Prost Cancer Prostatic Dis* 2001;4:235–41.
74. Rosenbaum ME, Nisly NL, Ferguson KJ, Kligman EW. Academic physicians and complementary and alternative medicine: an institutional survey. *Am J Med Qual* 2002;17:3–9.
75. Brown CM. Use of alternative therapies and their impact on compliance: perceptions of community pharmacists in Texas. *J Am Pharm Assoc* 1998;38:603–8.
76. Cohen MM, Penman S, Pirotta M, Costa CD. The integration of complementary therapies in Australian general practice: results of a national survey. *J Altern Complement Med* 2004;11:995–1004.
77. Givon SM, Liberman N, Klang S, Kahan E. A survey of primary care physicians' perceptions of their patients' use of complementary medicine. *Complement Ther Med* 2003;11:254–60.
78. Newell S, Sanson-Fisher RW. Australian oncologists' self-reported knowledge and attitudes about non-traditional therapies used by cancer patients. *Med J Aust* 2000;172:110–3.
79. Easthope G, Tranter B, Gill G. General practitioners' attitudes toward complementary therapies. *Soc Sci Med* 2000;51:1555–61.
80. Hall K, Giles-Corti B. Complementary therapies and the general practitioner: a survey of Perth GPs. *Aust Fam Physician* 2000;29:602–6.
81. Gaffney L, Smith CA. Use of complementary therapies in pregnancy: the perceptions of obstetricians and midwives in South Australia. *Aust NZ J Obstet Gynaecol* 2004;44:24–9.
82. Easthope G, Tranter B, Gill G. Normal medical practice of referring patients for complementary therapies among Australian general practitioners. *Complement Ther Med* 2000;8:226–33.
83. Eastwood H. Why are Australian GPs using alternative medicine?: postmodernisation, consumerism and the shift towards holistic health. *J Sociology* 2000;36:133–56.
84. Mildren SP, Stokols D. Physicians' attitudes and practices regarding complementary and alternative medicine. *Behav Med* 2004;30:73–82.
85. Walter G, Rey JM, Harding A. Psychiatrists' experience and views regarding St John's Wort and 'alternative' treatments. *Aust NZ J Psychiatry* 2000;34:992–6.
86. Leach M. An examination of factors influencing natural therapy use in the Royal District Nursing Service. *Aust J Holistic Nurs* 2002;9:41–9.
87. Tracy MF, Lindquist R, Savik K, et al. Use of complementary and alternative therapies: a national survey of critical care nurses. *Am J Crit Care* 2005;14:404–14; quiz 15–16.

88. Tracy MF, Lindquist R, Watanuki S, et al. Nurse attitudes towards the use of complementary and alternative therapies in critical care. *Heart Lung* 2003;32:197–209.
89. Wilkinson JM, Simpson MD. Personal and professional use of complementary therapies by nurses in NSW, Australia. *Complement Ther Nurs Midwifery* 2002;8:142–7.
90. Tattam A. Destiny or dalliance... the use of complementary therapies is booming. *Aust Nurs J* 1995;3:18–21.
91. Sohn PM, Loveland Cook CA. Nurse practitioner knowledge of complementary alternative health care: foundation for practice. *J Adv Nurs* 2002;39:9–16.
92. Naidu S, Wilkinson JM, Simpson MD. Attitudes of Australian pharmacists toward complementary and alternative medicines. *Ann Pharmacother* 2005;39:1456–61.
93. Welna EM, Hadsall RS, Schommer JC. Pharmacists' personal use, professional practice behaviors, and perceptions regarding herbal and other natural products. *J Am Pharm Assoc* 2003;43:602–11.
94. Kestin M, Miller L, Littlejohn G, Wahlqvist M. The use of unproven remedies for rheumatoid arthritis in Australia. *Med J Aust* 1985;143:516–8.
95. Lee YK, Georgiou C, Raab C. The knowledge, attitudes, and practices of dietitians licensed in Oregon regarding functional foods, nutrient supplements, and herbs as complementary medicine. *J Am Diet Assoc* 2000;100:543–8.
96. Baugniet J, Boon H, Ostbye T. Complementary/alternative medicine: comparing the view of medical students with students in other health care professions. *Fam Med* 2000;32:178–84.
97. Furnham A, McGill C. Medical students' attitudes about complementary and alternative medicine. *J Altern Complement Med* 2003;9:275–84.
98. Chez RA, Jonas WB, Crawford C. A survey of medical students' opinions about complementary and alternative medicine. *Am J Obstet Gynaecol* 2001;185:754–7.
99. Walker JB. Evaluation of the ability of seven herbal resources to answer questions about herbal products asked in drug information centers. *Pharmacotherapy* 2002;22:1611–5.
100. Bouldin AS, Smith MC, Banahan IB, et al. Herbal supplement information and the consumer. *Drug Info J* 2000;34:1339–53.
101. Kuo GM, Hawley ST, Weiss LT, et al. Factors associated with herbal use among urban multiethnic primary care patients: a cross-sectional survey. *BMC Complement Altern Med* 2004;4:18.
102. Boon H, Brown JB, Gavin A, et al. Breast cancer survivors' perceptions of complementary/alternative medicine (CAM): making the decision to use or not to use. *Qual Health Res* 1999;9:639–53.
103. Jurgens T. Who should be providing information to patients about herbal medicine? *Can J Clin Pharmacol* 2001;8:186–7.
104. Koh HL, Teo HH, Ng HL. Pharmacists' patterns of use, knowledge, and attitudes toward complementary and alternative medicine. *J Altern Complement Med* 2003;9:51–63.
105. Smith C, Martin K, Hotham E, et al. Naturopaths practice behaviour: provision and access to information on complementary and alternative medicines. *BMC Complement Altern Med* 2005;5:11.
106. Dooley MJ, Lee DY, Marriott JL. Practitioners' sources of clinical information on complementary and alternative medicine in oncology. *Support Care Cancer* 2004;12:114–9.
107. Calder J, Issenman R, Cawdron R. Health information provided by retail health food outlets. *Can J Gastroenterol* 2000;14:767–71.
108. Mills E, Ernst E, Singh R, et al. Health food store recommendations: implications for breast cancer patients. *Breast Cancer Res* 2003;5:170–4.
109. Szeto PCY, Semple SJ, Roughead EE. A study of complementary medicine advertising in Australia. *Aust Pharm* 2002;21:762–4, 6–7.
110. Briggs D, Davies CA, Forbes R, et al. Advertising of Complementary Medicine. *J Complement Med* 2004;3:44–6, 8, 50.

111. Hall M, Nazir N. Quantification of the scientific research in the United States about popular herbal remedies referenced on PubMed. *Altern Ther Health Med* 2005;11:34–7.
112. Raschetti R, Menniti-Ippolito F, Forcella E, Bianchi C. Complementary and alternative medicine in the scientific literature. *J Altern Complement Med* 2005;11:209–12.
113. Huber JT, Gullion JS. Complementary and alternative medicine as represented in the HIV/AIDS body of knowledge: a bibliometric analysis. *Med Ref Serv Q* 2003;22:23–32.
114. Queensland University of Technology. Evaluating and comparing journals: Impact factors and alternatives. Brisbane: QUT, April 2007.
http://www.library.qut.edu.au/subjectpath/impact_factors.jsp#what (accessed 2 Dec 2007).
115. Linde K, Willich SN. How objective are systematic reviews? Differences between reviews on complementary medicine. *J R Soc Med* 2003;96:17–22.
116. Lawson ML, Pham B, Klassen TP, Moher D. Systematic reviews involving complementary and alternative medicine interventions had higher quality of reporting than conventional medicine reviews. *J Clin Epidemiol* 2005;58:777–84.
117. Klassen TP, Pham B, Lawson ML, Moher D. For randomized controlled trials, the quality of reports of complementary and alternative medicine was as good as reports of conventional medicine *J Clin Epidemiol* 2005;58:763–8.
118. Schmidt K, Ernst E. Assessing websites on complementary and alternative medicine for cancer. *Ann Oncol* 2004;15:733–42.
119. Fox S, Rainie L. Vital decisions: How Internet users decide what information to trust when they or their loved ones are sick. 2002:<http://www.pewinternet.org> (accessed June 2006).
120. Walji M, Sagaram S, Meric-Bernstam F, et al. Cancer-related complementary and alternative medicine online: factors affecting information retrieval. *Medinfo* 2004;11:1318–22.
121. Sagaram S, Walji M, Bernstam E. Evaluating the prevalence, content and readability of complementary and alternative medicine (CAM) web pages on the internet. *Proceedings / AMIA 2002;Annual Symposium:672–6*.
122. Morris CA, Avorn J. Internet Marketing of Herbal Products. *JAMA* 2003;290:1505–9.
123. Walji M, Sagaram S, Sagaram D, et al. Efficacy of quality criteria to identify potentially harmful information: a cross-sectional survey of complementary and alternative medicine web sites. *J Med Internet Res* 2004;6:e21.
124. Ernst E, Schmidt K. 'Alternative' cures for depression – how safe are web sites? *Psychiatry Res* 2004;129:297–301.
125. Molassiotis A, Xu M. Quality and safety issues of web-based information about herbal medicines in the treatment of cancer. *Complement Ther Med* 2004;12:217–27.
126. Jackson EA, Kanmaz T. An overview of information resources for herbal medicinals and dietary supplements. *J Herb Pharmacotherapy* 2001;1:35–61.
127. Nathan JP, Cicero LA, Koumis T, et al. Availability of and attitudes toward resources on alternative medicine products in the community pharmacy setting. *J Am Pharm Assoc* 2005;45:734–9.
128. Sweet BV, Gay WE, Leady MA, Stumpf JL. Usefulness of herbal and dietary supplement references. *Ann Pharmacother* 2003;37:494–9.
129. Chambliss WG, Hufford CD, Flagg ML, Glisson JK. Assessment of the quality of reference books on botanical dietary supplements. *J Am Pharm Assoc* 2002;42:723–34.
130. Cooke A, Gray L. Evaluating the quality of internet-based information about alternative therapies: development of the BIOME guidelines. *J Public Health Med* 2002;24:261–7.
131. Sagaram S, Walji M, Meric-Bernstam F, et al. Inter-observer agreement for quality measures applied to online health information. *Medinfo* 2004;11:1308–12.
132. Seigel S, Castellan NJ. *Nonparametric statistics for the behavioural sciences*. New York: McGraw-Hill International, 1988.

133. Eng JL, Monkman DA, Verhoef MJ, et al. Canadian Cancer Society Information Services: lessons learned about complementary medicine information needs. *Chronic Dis Can* 2001;22:102–7.
134. Chang ZG, Kennedy DT, Holdford DA, Small RE. Pharmacists' knowledge and attitudes toward herbal medicine. *Ann Pharmacother* 2000;34:710–5.
135. Kernich CA. Patient and family fact sheet. *Alternative and complementary medicine. Neurologist* 2001;7:369–70.
136. Brophy E. Does a doctor have a duty to provide information and advice about complementary and alternative medicine? *J Law Med* 2003;10:271–84.
137. Mahady GB. Global harmonization of herbal health claims. *J Nutr* 2001;131:1120S–3S.
138. Mills SY. The House of Lords report on complementary medicine: a summary. *Complement Ther Med* 2001;9:34–9.
139. Lee CO. Communicating facts and knowledge in cancer complementary and alternative medicine. *Semin Oncol Nurs* 2005;21:201–14.
140. Moses G. Complementary and alternative medicine use in the elderly. *J Pharm Pract Res* 2005;35:63–8.
141. Braun L. Complementary Medicine Information. *J Complement Med* 2004;3:80–4.
142. Scott GN, Elmer GW. Update on natural product–drug interactions. *Am J Health Syst Pharm* 2002;59:339–47.
143. West PM, Lodolce AE, Johnston AK. Telephone service for providing consumers with information on herbal supplements. *Am J Health Syst Pharm* 2001;58:1842–6.
144. Jackson EA. Resources for information on herbal medicinals and dietary supplements. *J Herb Pharmacotherapy* 2001;1:89–98.
145. Frenkel MA, Borkan JM. An approach for integrating complementary–alternative medicine into primary care. *Fam Pract* 2003;20:324–32.
146. Friedman Y. Navigating the world of alternative medicine. Worthwhile Web sites. *Am J Nurs* 2001;101:87–9.
147. Oleson TD. Herbal medicine online. *J Altern Complement Med* 2003;9:581–4.
148. Flory SM, Seamon MJ. Internet search for herbal drug product information. *Hosp Pharm* 1998;33:1499–503.
149. Thomson T. Web resources for CAM researchers. *Complement Ther Med* 2000;8:216–7.
150. Parkman CA. Integrating CAM into traditional health care. *Case Manager* 2000;11:27–9.
151. Mihalynuk TV, Knopp RH, Scott CS, Coombs JB. Physician informational needs in providing nutritional guidance to patients. *Fam Med* 2004;36:722–6.
152. Schmidt LM. Herbal remedies: the other drugs your patients take. *Home Healthc Nurse* 2004;22:169–75.
153. Wilson K, McGowan J, Guyatt G, et al. Teaching evidence-based complementary and alternative medicine: 3. Asking the questions and identifying the information. *J Altern Complement Med* 2002;8:499–506.
154. Richardson J. The importance of information resources in complementary therapies. *Complement Ther Nurs Midwifery* 2002;8:125–9.
155. Tomasulo P. A new source of herbal information on the Web: the IBIDS database. *Med Ref Serv Q* 2000;19:53–7.
156. Schmidt K. CAM and the desperate call for cancer cures and alleviation what can websites offer cancer patients? *Complement Ther Med* 2002;10:179–80.
157. Tang AKY. What's in the web for family physicians – Traditional Chinese medicine. *Hong Kong Practitioner* 2003;25:383.
158. Whelan JS, Dvorkin L. HolisticKids.org – evolution of information resources in pediatric complementary and alternative medicine projects: from monographs to Web learning. *J Med Libr Assoc* 2003;91:411–7.
159. Mitka M. Web Site Showcases Science-Based Information on Herbs, Other Supplements. *JAMA* 2003;289:829–30.

160. Kronenberg F, Molholt P, Zeng ML, Eskinazi D. A comprehensive information resource on traditional, complementary, and alternative medicine: toward an international collaboration. *J Altern Complement Med* 2001;7:723–9.
161. Albrecht H, van Wijk R, Dittloff S. A new database on basic research in homeopathy. *J Faculty Homeopathy* 2002;91:162–5.
162. Rankow VG. Breast cancer resources on the Internet: a selective list of resources for conventional and complementary/alternative information about breast. *National Network* 2002;27:16–8.
163. Snyder M, Wieland J. Complementary and alternative therapies: what is their place in the management of chronic pain? *Nurs Clin N Am* 2003;38:495–508.
164. Zink T, Chaffin J. Herbal 'health' products: What family physicians need to know. *Am Fam Physician* 1998;58:1133–40.
165. Smith M, Boon HS. Counseling cancer patients about herbal medicine. *Patient Educ Couns* 1999;38:109–20.