Complementary and Alternative Medicine Use in Australia: A National Population-Based Study

A thesis submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy

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DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic awards; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; and, any editorial work, paid or unpaid, carried out by a third party is acknowledged.

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Date: _____

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PUBLICATIONS

Publications arising from this thesis

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Publications relevant to this thesis

- Xue CCL, Lee C, Karagiannis J, Li CG, Yang AWH, Zhang L, and Story DF. Public Attitudes to Chinese Medicine in Melbourne, Australia. *Journal of Complementary and Integrative Medicine*. 2005 Vol. 2: No.1, Article 8.

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- Zhang L, Lin V, Story DF, Xue CCL. Usage of Complementary and Alternative Medicine by Elderly Australians: A National Population-Based Study in 2005. The 3rd International Conference on Healthy Ageing & Longevity, Melbourne. 13-15 October 2006.

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- Xue CCL, Zhang L, Lin V, Story DF. A National Population Study on Chinese Medicine Usage: 2004-2005. Australasian Acupuncture & Chinese Medicine Annual Conference, Adelaide. 19-21 May 2006.
- Xue CCL, Zhang L, Story DF, Lin V, Da Costa, C. Current Usage of Complementary Medicines in Australia: A National Study. Harmonisation of Traditional and Modern Medicine: An International Symposium, Melbourne. 12-14 December 2005.
- Zhang L, Xue CCL, Story DF, Lin V, Da Costa, C. Investigating Utilisation of Complementary Medicines in Australia: Methodological Approaches. Harmonisation of Traditional and Modern Medicine: An International Symposium, Melbourne. 12-14 December 2005.

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ABBREVIATIONS

Acronym	Description
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ACU	Acupuncture
AIHW	Australian Institute of Health and Welfare
AROMA	Aromatherapy
CAM	Complementary and Alternative Medicine
CAMP	Complementary and Alternative Medicine Practitioner
CATI	Computer Assisted Telephone Interview
CAPI	Computer Assisted Personal Interview
CI	Confidence Interval
CHM	Chinese Herbal Medicine
CHMP	Chinese Herbal Medicine Practitioner
CHIRO	Chiropractic
CM	Chinese Medicine
CMDT	Chinese Medicine Dietary Therapy
CMRBVic	Chinese Medicine Registration Board of Victoria
COPD	Chronic Obstructive Pulmonary Disease
CTM	Chinese Therapeutic Massage
DoHA	Australian Department of Health and Ageing
HM	Herbal Medicine
HOMEO	Homeopathy
DHS	Department of Human Services
GP	General Practitioner
MBS	Medicare Benefits Schedule
NATURO	Naturopathy
NCCAM	National Center for Complementary and Alternative Medicine (US)
NHS	National Health System (Medicare)
NHMRC	National Health and Medical Research Council (Australia)

Acronym	Description
NSW	New South Wales
NT	Northern Territory
OR	Odds Ratio
OSTEO	Osteopathy
OTC	Over-the-counter
PAC	Percentage Accurate in Classification
PBS	Pharmaceutical Benefits Scheme
PHI	Private Health Insurance
QLD	Queensland
QGMATC	Qigong, Martial Act and Tai chi
RA	Rheumatoid Arthritis
RDD	Random Digit Dialling
RMIT	Royal Melbourne Institute of Technology
RSE	Relative Standard Error
SA	South Australia
SD	Standard Deviation
SE	Standard Error
SPSS	Statistical Package for Social Sciences
TAS	Tasmania
TGA	Therapeutic Goods Administration
UK	The United Kingdom
US	The United States of America
VIC	Victoria
WA	Western Australia
WHM	Western Herbal Medicine
WHMP	Western Herbal Medicine Practitioner
WHO	World Health Organisation
WM	Western Medicine
WTM	Western Therapeutic Massage

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SUMMARY

The use of various forms of complementary and alternative medicine (CAM) has been increasing steadily over the last a couple of decades in both developing and developed countries. Although there has been no national population-based study on CAM use in Australia, a number of regional studies have indicated the consistent trend of increasing CAM use. This has drawn attention from the community, health professionals and governments on issues associated with its use, such as quality, safety and the efficacy of CAM interventions. In addition, there have been questions about the validity of the reported prevalence data due to the heterogeneity of the CAM therapies and the way samples that were drawn for these studies.

This thesis presents findings of a series of systematic literature reviews of CAM usage internationally and in Australia, which provided the basis for the planning of a national population-based study. Most importantly, the thesis presents the key findings and detailed analyses of findings of this Australian CAM usage study based on a national representative sample.

The first systematic review considered provides comprehensive overview of the current CAM use in the general populations around the world. In the second review, concerning the situation in Australia, the usage of CAM by the general population in different regions and specific patient groups was evaluated. Finally, the use of all modalities of Chinese medicine worldwide was also systematically appraised. Although there are a number of methodological issues that might have an impact on the validity of the prevalence data of overall and specific CAM use, over the last decade, the use of the most common forms of CAM such as herbal medicine in a number of countries has increased markedly. In Australia, despite the fact that

there has been no national population-based study, existing literature on regional health studies suggests that, in general, a higher level of use of CAM therapies in Australia than in other Western countries.

The national population-based survey was planned to investigate the national profile of CAM use in Australia, and to identify possible regional differences. The survey employed a random digit dialling (RDD) sampling method and interviews were carried out using computer-assisted telephone interviews (CATI) for data collection. A sample size of 1,067 participants was calculated and allocated between the six Australian states and two territories in proportion to Australian census data. National quotas for age and gender were applied to enhance the representativeness of the study populations. After undertaking a pilot study to refine the survey instruments and the CATI program, the major survey was conducted between May and June 2005. Comparison of respondents' demographic statistics with the Australian Census data confirmed the representativeness of the study sample.

Through the three systematic reviews and consultation with experts in the field, a total of 17 CAM therapies were included in the study. The 17 forms of CAM consist of substance-based therapies, such as Chinese herbal medicine; manipulation therapies, such as chiropractic; nutrition therapies, such as multi-vitamins; exercise-based therapies, such as Qigong; and mind-body therapies, such as meditation.

The most striking finding of this study is that the prevalence of overall CAM use in Australia is considerably higher than estimated in previously regional studies. Over two thirds (68.9%, 95% CI: 66.1% to 71.7%) of participants had used at least one of the 17 CAM therapies in the previous 12 months. Of these CAM users, 64.0%, (95%CI: 60.5% to 67.5%) had visited a CAM practitioner, that is, 44.1% of the total survey participants. Concerning the specific use

of the 17 forms of CAM, the 10 most popular forms, in decreasing order, were clinical nutrition, Western massage therapy, meditation, Western herbal medicine, aromatherapy, chiropractic, yoga, naturopathy, acupuncture and Chinese herbal medicine.

The high prevalence of CAM may be partially explained by regional (state) variations. Overall, the state of New South Wales had the highest CAM use (72.1%), closely followed by Queensland (71.0 %) and Victoria (69.8%), with South Australia being the lowest of prevalence (60.8%). In addition, significant regional differences were found for specific forms of CAM therapies. For example, the use of acupuncture and osteopathy was significantly lower in the states of Western Australia and South Australia. The prevalence of visits to acupuncturists, herbalists, naturopaths and osteopaths were also significantly lower in South Australia, compared to New South Wales and Victoria.

Consistent with the existing literature, the most common characteristics of CAM users were likely to be younger (aged from 18 to 34), female, employed, well educated, have private health insurance cover and have higher than average incomes. In terms of the frequency of practitioner visits and the expenditure related to CAM, the estimated number of visits to CAM practitioners by adult Australians in the 12 month period was comparable to the estimated number of visits to medical doctors. The annual "out of pocket" expenditure on CAM, nationally, was estimated as A$4.13 billion.

Importantly, additional information was also sought about each of the four forms of CAM, which in Australia are subject to statutory regulation in one or more states: Chinese herbal medicine, acupuncture, chiropractic and osteopathy. The perceived and actual benefits and risks of using these four forms of CAM therapies and other matters related to its use, such as the attitudes towards the national and private health insurance coverage are presented.

In summary, this first national CAM survey in Australia gathered critical data concerning the usage of CAM, investigated potential regional differences and estimated expenditure associated with these therapies. It also suggested that while the concurrent use of Western medicine and CAM was common, the communication among the different health-care professions and the consumers had been grossly inadequate. These findings have a number of implications such as interpretation of the perceived benefits and risks associated with the frequent CAM use, the needs of product and practitioner regulation, economic impact on users, actions required from health insurance companies and related government agencies as well as research and education programs.

CHAPTER 1. INTRODUCTION

1.1 Background

The use of complementary and alternative medicine (CAM) is increasing in the Western world.[1-7] This trend is apparent from comparisons of the findings of population studies conducted in the United States (US) in 1990[2] and 1997[3] and from national population health surveys in the US in 1999[4] and 2002.[1] It is significant that a comprehensive national study is currently being planned by the US National Center for Complementary and Alternative Medicine (NCCAM).[8] Surveys in other countries, including the United Kingdom,[5] Canada[6] and Japan[7] have revealed a similar trend. In Australia, estimates of CAM usage have been based on the Omnibus Health Surveys conducted in the State of South Australia in 1993,[9] 2000,[10] and 2004.[11] The findings of these studies are generally in accord with those in the US.[1-4]

Increasing CAM usage in the US, Australia and other Western countries is also reflected in the expenditure on CAM, which is of concern to consumers and governments. It has been estimated that a total of $US27 billion was spent out-of-pocket on CAM in the US in 1997.[3] Consistently, based on the South Australian Health Survey, [11] an estimated $AU1.8 billion was spent by Australians on CAM in 2004. It has also been estimated that there were approximately 1.9 million Western herbal medicine and naturopathy practitioner consultations in Australia in 2003.[12]

In recognition of the increasing use of CAM, state and national governments in Australia have recently introduced regulatory measures for certain forms of CAM. For example, the State of Victoria introduced statutory regulation of Chinese medicine in 2000,[13] the first jurisdiction outside China to do so. Two other Australian states, Western Australia and New South Wales, are developing similar legislation. At the national level, the Office of Complementary Medicine was established within the Australian Therapeutic Goods Administration (TGA) in 1999 to align the regulation of some forms of CAM with that of conventional medicines.[14] These actions are welcome; however, they relate only to certain specific forms of CAM and do not address a range of issues that are critical for public safety and confidence in CAM. Of particular concern are potential adverse interactions due to the concurrent use of CAM and conventional health-care services and products.

There has been no nationwide study to investigate CAM use in Australia, and the states of Queensland, New South Wales and Victoria have higher numbers of some types of CAM practitioners, such as Western herbal medicine practitioners and naturopaths, than other Australian states.[12] Thus, there is a view that there might be differences in the prevalence of use of different forms of CAM between states/territories of Australia, and, as mentioned above, Chinese herbal medicine and acupuncture have been subject to statutory regulation in Victoria since 2000, which may have influenced the use of Chinese medicine in this state.

1.2 Rationale

As mentioned above, in recent years numerous population studies have been conducted to determine the national prevalence and expenditure of CAM in many countries.[1-7,9-11,15-17] In Australia, at least three regional studies were conducted between 1993 and 2004.[9-11] High levels of the use of CAM and expenditure on it were reported. However, systematic reviews [18,19] also suggested that there are considerable discrepancies in the findings of different studies on the use of various forms of CAM. In general, a clear definition of CAM and a system of classification of CAM modalities, an appropriated-designed survey instrument, as well as rigorous sampling and data collection methods are the major factors impacting on the internal and external validity of these studies. Considerable efforts have been made to address these issues in the current study.

Extrapolation of the findings of Australian regional studies [9-11] to a national level could be problematic. As mentioned above, it is generally accepted and also observed in previous studies [12] that some CAM practitioners are more concentrated in New South Wales, Victoria and Queensland. Other limitations of these regional studies include possible overlapping CAM modalities (e.g. Chinese medicine, herbal medicine and Ginseng) and also that the range of CAM modalities included were differed,[9-11] for example, the exclusion of some popular CAM modalities (e.g. massage, see Chapter 2, Table 2.2).

Although conventional medical therapies are still predominant in the treatment and management of diseases/conditions, there is evidence that many Australians are turning to various forms of CAM to supplement, and sometimes replace, conventional treatments. It is apparent that patients with chronic diseases, such as arthritis,[20] diabetes,[21] asthma,[22] and

chronic inflammatory conditions, commonly use CAM therapies.[23] A small number of high-quality clinical trials have demonstrated that some forms of CAM have a marginal benefit for a narrow range of such chronic illnesses. These therapies include manipulation for low-back pain,[24] acupuncture for improving function and pain relief in osteoarthritis.[25] Thus, it is of interest to explore some common forms of CAM that being used by the general populations for a range of medical conditions.

Currently in Australia, limited studies were conducted to explore matters that related to CAM use. Thus, where relevant, matters such as the extent to which medical doctors are aware of their patients' use of CAM, the perceived and actual benefits and risks of CAM use, the relationship between CAM use and regulatory and health insurance coverage matters, and some related economic considerations, such as personal expenditure on CAM were also explored.

In summary, the need for a nationwide population-based study on CAM utilisation in Australia is warranted. This study was undertaken to investigate the national epidemiological profile of CAM use in Australia, and to reveal possible regional differences. A total of 17 CAM therapies were included in the study. They included substance-based therapies, such as Chinese herbal medicine; manipulation therapies, such as chiropractic; nutrition therapies, such as multi-vitamins; exercise-based therapies, such as Qigong; and mind-body therapies, such as meditation. Additional information was also sought about each of the four forms of CAM, which in Australia are subject to statutory regulation in one or more states: acupuncture, Chinese herbal medicine, chiropractic and osteopathy.

1.3 Objectives and Research Questions

The aims of the present study were to collect information about the use of CAM in the Australian general population, specifically, to investigate the prevalence of use, out-of-pocket expenditure on CAM and to evaluate other matters related CAM use such as health insurance coverage, regulation and, perceived and actual benefits and risks of using several specific forms of CAM.

The overall objectives and associated research questions are:

1. Delineate the current utilisation of CAM in Australia.
    a. What is the total prevalence of use of CAM (practitioner visits and products)?
    b. What are the relative popularities of different forms of CAM?
    c. What is the prevalence and frequency of CAM practitioner visits?
    d. Are there regional (state) differences in CAM use in Australia?
    e. How is the public demand for CAM changing?
2. Estimate the expenditure associated with CAM products/services in Australia and assess the socio-economic characteristics of CAM users.
    a. What is the out-of-pocket expenditure?
    b. What are economic consequences and drivers for CAM use?
3. Explore the rationale for CAM use by consumers and their general concerns.
    a. Are there differences in the forms of CAM used related to age, gender, national region or other socio-demographic characteristics?
    b. What specific benefits and risks are perceived by the users of common forms of CAM?

c. What benefits and risks do users of common forms of CAM consider they have actually received?

d. What proportion of CAM users voluntarily discusses their use of CAM with their medical doctors? And what are the main reasons for non-disclosure of use?

4. Evaluate the extent, demand for and consequences of health insurance cover for CAM products/therapies.

   a. What is the extent of health insurance coverage on CAM?

   b. What proportion of users receives health insurance rebates for CAM?

   c. What is the public demand for insurance coverage on CAM?

   d. Does the availability of insurance cover affect the demand and utilisation of CAM?

5. Explore attitudes towards statutory CAM regulation.

   a. Does statutory regulation have an impact on the demand/use of specific forms of CAM?

6. How do the survey results compare with those of other national and international studies?

1.4 Significance of the Study

The use of CAM therapies by Australians has increased markedly over the last two to three decades and it seems certain that this trend will continue. Given this situation, the present study was intended to address a broad range of issues concerning the use of CAM in Australia that have not been answered conclusively by previous studies. This study has created a national, population-based epidemiological profile of CAM use by the Australian adult population, including an investigation of differences between individual states and territories. Specifically, the study has provided reliable and comprehensive information on the prevalence of use of individual forms of CAM, rationales for using CAM and the perceptions of users of the risks and benefits of CAM therapies.

The findings also provide insights into the attitudes of CAM users and non-users of the provision of health insurance cover for CAM therapies and how the availability of insurance cover may influence the use of CAM products and services. A fuller understanding of such issues is essential for determining the need for, and the nature of initiatives by governments and health-care agencies to enhance public safety and confidence in CAM therapies. Such considerations should include adequate regulatory controls on CAM products and CAM practitioners, training of health-care professionals (CAM and conventional health-care providers), public education, and health services planning (including health economics). The study outcomes will also assist in defining additional research needs, ranging from socio-economic to scientific/clinical research related to safety and efficacy of CAM therapies.

The risks associated with the use of CAM are of growing concern. Therefore, important objectives of the proposed study were to investigate the level of understanding by users of the

potential for adverse effects of individual forms of CAM, the incidence and nature of adverse effects and, critically, the effectiveness of communication between patients and health-care practitioners. Thus, the study has provided information on the levels of awareness of health-care professionals of their patients' use of CAM and the extent to which CAM users understand the risks and benefits of CAM. The outcomes reinforce the need for health-care professionals to be aware of their patients' therapeutic choices and the need for them to advise their patients about the appropriate and safe use of CAM.

The information collected in the study on the demographic characteristics of CAM users, on their rationales for deciding to use CAM, on the specific health conditions for which common forms of CAM are being used will provide a much-needed population data-set for health care researchers (for future population studies and basic and clinical research) and help identify priorities for further research on the use of CAM, including laboratory and clinical research on the efficacy and safety of CAM therapies. This is consistent with the recommendations of the Federal Government's Review of Complementary Therapies in the Australian Health-care System. [26] In addition, the data collected will also guide government agencies in the development of further regulatory controls for CAM and provide consumers with relevant and timely advice on CAM use. The findings will also guide educational institutions concerned with both the training of conventional health-care practitioners and CAM practitioners in respect of designing curricula which recognise the broad range of therapies being used by the population.

1.5 Organisation of the Thesis

This thesis comprises eight chapters. Chapter 1 provides a brief overview of the background, rationale, objectives and details the specific research questions addressed by the study, as well as the significance of the study. Chapter 2 comprises three systematic reviews of CAM utilisation literature. The first review is concerned with global utilisation of CAM, the second summarises specifically CAM use among the general Australian population and by individuals with various diseases/conditions, and the third review exclusively covers Chinese medicine utilisation.

Chapter 3 discusses methodological issues associated with conducting a CAM population study in Australia. This chapter also addresses the approaches adopted to achieve a representative study population sample, the data collection process (computer-assisted telephone interviews), and the challenges of addressing commonly encountered problems, such as the definition and classification of CAM modalities.

The results and discussions of the national CAM population survey are divided into four sections: Chapter 4 presents a national profile of CAM utilisation in Australia through a multivariate analysis of the survey data. It examines CAM utilisation as a whole, including its prevalence of use and, prevalence and frequency of visiting CAM practitioners.

Chapter 5 presents detailed analyses of the regional differences in CAM use in Australia. Chapter 6 presents the findings on the four CAM modalities that are currently regulated in Australia, at either national or state level, that is, acupuncture, Chinese herbal medicine, chiropractic and osteopathy. Specific data related to these therapies such as expectations of the

users, actual outcomes, and adverse events related to their use were sought from survey participants.

Chapter 7 presented additional results arising from the CAM survey including the expenditure on CAM, the rationales for CAM use, concurrent use of both CAM and Western medicine, and other matters such as, health insurance coverage and regulatory issues. The general discussion, conclusions, policy implications, limitations of the study and some possible solutions are included in Chapters 8.

CHAPTER 2. LITERATURE REVIEW

2.1 Definition of Complementary and Alternative Medicine (CAM)

There have been many debates surrounding a single definition of complementary and alternative medicine (CAM), but none have been conclusive.[27] Considering the diversity of CAM modalities, the definitions of CAM in the current literature are inconsistent, and vary significantly in different social contexts.

The term "complementary and alternative medicine" and its short form, "CAM", are terms most commonly used in the literature. "Complementary" generally mean that such medicine (including therapies and products) is being used in addition to conventional Western medicine. "Alternative" implies it is being used independently. Other terms are widespread, and are used interchangeably, to describe CAM.[28] They include: traditional, oriental, holistic, unconventional, non-conventional, unorthodox, essential and unproven medicine.

One of the major biologically based CAM therapies, "megavitamins", sometimes referred to dietary supplements is somewhat vaguely defined. A national CAM study in the US[3] referred to these dietary supplements as vitamins not prescribed by a medical doctor. The US National Health Interview Survey[1] referred to these as vitamins used in excess of the recommended daily allowances (RDA) established by the National Academy of Sciences, Food and Nutrition Board.

Although the various definitions of CAM are debatable, after carefully examining the literature it is apparent that most of these definitions are made in relation to conventional (Western) medicine. This viewpoint is supported in a recent editorial published in the *Journal of Alternative and Complementary Medicine*.[29]

In a US landmark study on CAM utilisation in 1990, the research team referred to CAM as "interventions neither taught widely in medical schools nor generally available in US hospitals".[2] At the same time, in an attempt to clarify the issue, the British Medical Association came up with the following:[30]

"Both alternative and complementary types of medicine are described by the term "non-conventional". This is not an exclusionary term and illustrates the level of acceptance of these methods by the medical community. Complementary medicine is defined as those techniques which are used while the patient is using conventional ones. These include methods such as chiropractic and osteopathy. Alternative medicine includes techniques which are used to the exclusion of conventional medicine. These methods have been specified as incompatible with conventional practice (i.e. certain types of herbal remedies)."

In 1995, in a letter[27] sent to the *British Journal of General Practice*, Ernst and his colleagues commented that: "Complementary medicine is diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, by satisfying a demand not met by orthodoxy or by diversifying the conceptual frameworks of medicine". They further commented that an inclusive, positive approach, not defining what complementary medicine does not represent but what it actually means, would clearly be more constructive.

More recently, the definition of CAM appears to refer to a broad range of therapies and products. A document produced by the World Health Organisation (WHO)[31] refers to CAM as "a broad set of health care practices that are not part of that country's own tradition and are not integrated into the dominant health care system". Similarly, the National Center for CAM (US) defined CAM as "a group of diverse health-care and medical practices and products that are not presently considered to be an integral part of conventional medicine".[32] Perhaps a more encompassing definition of CAM was provided by the Office of Alternative Medicine (OAM) expert panel at the Conference on CAM Research Methodology in Bethesda, MD, in April 1995:[33]

"A broad domain of healing recourses that encompasses all health systems, modalities, other than those intrinsic to the politically dominant health systems of a particular society or culture in a given historical period. CAM includes all such practices and ideas self-defined by their users as preventing or treating illness or promoting health and well-being. Boundaries within CAM and between the CAM domain and the domain of the dominant system are not always sharp or fixed".

2.2 Classification of CAM Modalities

No conclusive definition of CAM has been advanced. Debates continue in an attempt to classify CAM;[29] so do discussions on the CAM therapies that should be included to produce the overall CAM prevalence in various societies.[33] Most notably, there were critics of the abovementioned US landmark CAM survey in 1990.[2] Rosner [34] argued for the inclusion of chiropractic as an alternative or complementary therapy to conventional medicine, as it has been largely accepted by the general public as a form of effective health care. Similarly, Fridman *et al*.[35] argued for the inclusion of relaxation techniques as a single form of CAM. Both views were published in the "*New England Journal of Medicine*", in the issue following publication of the 1990 CAM survey.[2]

Some so-called CAM modalities, such as Chinese medicine in China and ayurvedic medicine in India, have been used for thousands of years as medical systems in different countries. Some forms of CAM, such as osteopathy, homeopathy, and chiropractic, originated from, and to various extents have been incorporated into Western medical systems. However, some CAM may be considered outside the boundaries of current, well-established Western medical theory. An example is folk medicine which the medical community has rejected in the past, due to the lack of scientific evidence that meets mainstream medical standards. But to the extent that such therapies are better researched and produce convincing scientific evidence, they may become gradually accepted.

Excessively large numbers of modalities fall under the umbrella of the term CAM. Given the growing popularity of CAM use, the NCCAM[36] divided these into five major domains. Table 2.1 is a synthesis of these classifications.

Table 2.1 CAM modalities classified in the National Center for Complementary and Alternative Medicine (NCCAM)

Classifications	CAM therapies (NCCAM samples)
Alternative medical systems	• Homeopathic medicine • Naturopathic medicine • Traditional Chinese medicine • Ayurvedic medicine
Mind-body interventions	• Meditation, prayer, mental healing, and therapies that use creative outlets such as art, music, or dance
Biologically based therapies	• Dietary supplements: vitamins, minerals, herbs or other botanicals, amino acids, and substances, such as enzymes, organ tissues, and metabolites
Manipulative and body-based methods	• Chiropractic • Osteopathic • Massage
Energy therapies	• Qigong, reiki, therapeutic touch, pulsed fields, magnetic fields

Differences in the comprehensiveness of CAM modalities can be observed by making comparisons between two recent studies conducted in the US and Australia.[1,11] The South Australian health survey[11] employed a prompt card in a face-to-face interview and asked participants whether they had used any one of seven forms of CAM or "other CAM". The 2002 US National Health Interview Survey[1] included questions on 27 types of CAM therapies, which had been considered to be commonly used in the US. Comparisons between an investigation of popular forms of CAM only, and a relatively comprehensive classification of CAM deserves further deliberation.

Most surveys on CAM prevalence used a questionnaire with a list of common therapies. The list has been adapted from previous studies and/or aimed to reflect the diverse cultures or make up of the population being studied. However, the current thesis does not provide

judgement on how many on which CAM modalities comprise the definitive spectrum. In order to make comparisons with the existing classifications of CAM in Australian, a systematic search on published studies on CAM usage in Australia was conducted.

A total of five studies[9-11,37,38] were identified as Australian regional surveys based on random or representative samples. The detailed methodologies and CAM modalities in these studies are summarised in Table 2.2. The CAM modalities used in these surveys, not surprisingly, varied considerably, and even changed over time in studies.[9-11] Nevertheless, this methodology comparison provided the essential data of CAM usage in the Australian context, and formed the basis of the list of CAM therapies used in the present study. Internationally, two systemic reviews on CAM utilisation in different countries that based on representative populations were referred,[18,19] and a number of questionnaires that used in CAM utilisation surveys worldwide were consulted.

Table 2.2 CAM modalities and data collection method in Australian regional surveys

Author (year)	Place of study (year)	Sample (n)	Data collection method	Forms of CAM included in studies
MacLennan *et al.* (2006)[11]	South Australia (2004)	Representative South Australian aged ≥15 (3,015)	Omnibus Health Survey: face-to-face interview	1. vitamins; 2. mineral supplements; 3. herbal medicines; 4. aromatherapy oils; 5. Chinese medicines; 6. homeopathic medicines; 7. other; 8. soy products.
MacLennan *et al.* (2002)[10]	South Australia (2000)	As above (3,027)	As above	1-7 as for MacLennan *et al*. 2006 plus 8. evening primrose oil; 9. ginseng.
MacLennan *et al.* (1996)[9]	South Australia (1993)	As above (3,004)	As above	1-7 as for MacLennan *et al*. 2006 plus 8. evening primrose oil; 9. ginseng; 10. PMTese; 11. Esten.
Wilkinson *et al.* (2001)[37]	Rural region of New South Wales (1999)	Randomly selected from electoral database (300)	Postal questionnaire	1. vitamins/mineral & supplements; 2. herbal therapy; 3. aromatherapy; 4. traditional Chinese medicine; 5. homeopathy; 6. meditation; 7. iridology; 8. chiropractic; 9. acupuncture; 10. reflexology; 11.massage; 12. naturopathy; 13. osteopathy; 14 other.
Kermode *et al.* (1998)[38]	North coast of New South Wales (1995)	Randomly selected adults (645)	Telephone interview	1. nutritional (18 items listed); 2. plant medicine (2 items listed); 3. homeopathic (4 items listed); 4. other.

2.3 Prevalence of CAM Use

2.3.1 Foreword

Despite the difficulties in defining CAM and describing the classifications of CAM modalities, the utilisation of CAM has been widely researched and there is extensive literature on the subject. In 2001, there were at least nine survey studies on the use of CAM among the general population of the US.[39] In Australia, CAM use among the general population has been investigated in sequential health surveys in the states of South Australia,[9-11]and New South Wales.[37,38]

To design the current study, it was essential to conduct a systematic review of the relevant literature. Presented in this chapter are three systematic reviews covering the following topics: 1) CAM use in the general population around the world (mainly Western English-speaking countries, due to the limitation of getting published English literature in some countries); 2) CAM used specifically in Australia. This includes CAM use among the general population and in defined populations, such as cancer patients and adolescents; 3) a purposely-designed systematic review of Chinese medicine. This is considered important because of the extraordinary popularity of Chinese medicine use around the world, and the instigation of Chinese medicine statutory regulation in some states in Australia. All identified studies are presented in corresponding tables in this chapter but may not be fully discussed.

2.3.2 CAM Utilisation Worldwide: A Systematic Review

This review aimed to systematically evaluate findings from published surveys on the uses of CAM by the general population. The secondary aim was to determine the methodological quality of these CAM surveys, to identify the methodological strengths and weaknesses to inform the design of the present national population-based CAM survey.

2.3.2.1 Methodology

The identification of literature in the CAM field is challenging. Establishing the prevalence and utilisation of CAM is complicated and time-consuming, given that there is often no simple means of identifying such publications. Some databases (e.g. MEDLINE) have developed literature filters for different types of publications, such as clinical trials and reviews. Such a filter for epidemiological studies is currently not available. Optimal retrieval of reports in biomedicine literature depends on the appropriate use of Medical Subject Headings (MeSH), descriptors and keywords among authors and indexers.[40]

A comprehensive list of key terminologies for the search strategy in MEDLINE was initially developed. Modified strategies were then used in other databases. Major MeSHs for CAM include "Complementary Therapies", "Medicine, Oriental Traditional" and "Medicine, Traditional". The MeSH search was used in conjunction with the keyword search. A systematic search of the literature was conducted on the following databases: MEDLINE (Ovid platform), EMBASE and CINAHL, covering all years since their inception up to September 2005. The search strategy for MEDLINE is presented in Table 2.3.

Table 2.3 Search strategy to identify CAM utilisation studies in MEDLINE

1. exp Complementary Therapies/
2. exp Alternative Medicine/
3. exp Medicine, Traditional/
4. exp Medicine, Oriental Traditional/
5. exp Drugs, Non-Prescription/
6. exp Plants, Medicinal/
7. exp Medicine, Herbal/
8. ((complementary or alternative or unconventional or traditional or unproven or integrat$ or oriental or non-orthodox or holistic or essential) adj (therap$ or medicine$ or health or treatment$ or remed$)).tw.
9. or/1-8
10. exp Prevalence/
11. exp Health Surveys/
12. exp Questionnaire/
13. exp Data Collection/
14. exp Epidemiologic Studies/
15. (use$ or usage$ or utili?ation or utili?e$ or survey$ or prevalence or questionnaire$ or pattern$ or interview$ or frequency).tw.
16. or/10-15
17. 9 and 16
18. Randomized Controlled Trials/
19. Clinical Trials/
20. randomized controlled trial.pt.
21. clinical trial.pt.
22. or/18-21
23. 17 not 22
24. limit 23 to animal
25. limit 23 to human
26. 24 not 25
27. 23 not 26
28. limit 27 to English

[/ indicates Medical Subject Heading term, $ = truncation, ? = substitution exp = exploded, tw = text word, pt = publication type, adj = adjacent; and/, or/, not/ are Boolean operators]

The databases were searched irrespective of publication status, although only articles published in English were included in the review. To qualify for inclusion, papers had to use specific survey methods, either questionnaires or interviews, to collect information relating to CAM use, and also meet one of the following criteria:

1. The study must have been based on a random or representative sample of a national general population.
2. The study must have been based on a random or representative sample of a general population for a defined regional area AND such a national study was not available.

Articles were excluded if one of the following criteria applied:

1. The study was an utilisation study on CAM use by a subpopulation, such as a cohort of patients with particular conditions (cancer, diabetes etc.) or a specific group of people (e.g. older people or adolescents).
2. The study investigated a single form of CAM (e.g. chiropractic), rather than CAM as a whole.
3. The report did not describe the study methods, e.g. a review or a general article that did not mention how the data of CAM prevalence were collected, or a report on studies described elsewhere.
4. The full publication was not written in English.
5. It was not published in an academic journal or a formal report document (where a copy of the report was not supplied elsewhere).

In addition to the literature search across major databases, the references of all relevant papers were examined to identify further literature. This approach has been found particularly useful in identifying studies that are not included in the electronic databases. All identified

publications were read in full, and data were extracted for their substantive information on the target population, study design, CAM modalities, prevalence of CAM use and other significant findings.

In order to access the most recent literature, new article-alert functions, available from the MEDLINE and EMBASE (through Science Direct) were activated in May 2004. These enable researchers to save search terms with databases when the searches are automatically performed over a defined period. Weekly searches were performed and article alters were produced continually. Literature reviews in this thesis include articles retrieved up to March 2006.

2.3.2.2 Results

The initial search identified over 1,200 articles. After reading titles and abstracts, a large proportion of the articles was excluded because they covered matters other than utilisation or prevalence (e.g. CAM regulation, integration approach and clinical trials) or duplicated other publications. The remaining 307 articles that presented data on CAM use were read in full. Of these, 290 articles were then excluded because they did not meet the inclusion criteria (see Chapter 2.3.2.1), for example, regional studies and studies on patients or health professionals. Two articles were identified by citation tracking of eligible articles. [15,41] Two additional articles were obtained in November 2005[42] and January 2006[11] when being notified by new-article alerts. Thus a total of 21 studies are included in the current review. [1-7,9-11,15-17,41-48] The key data of included articles are summarised in Table 2.4.

The use of CAM in the general population was systematically reviewed by both Ernst[18] and Harris *et al.*[19] in 2000. In 2001, Wootton and her colleagues also conducted a review of CAM use among the US population.[39] An overview of these three reviews and the current review are presented in Table 2.5. The majority of studies that were selected in the three reviews are also included in the current review. Reasons for exclusion are presented in Table 2.5.[49-58] As mentioned earlier, there have been many CAM utilisation studies in the past decade. 12 studies conducted after the publication of the three reviews mentioned above were identified and fulfilled the inclusion criteria.[1,4-7,10,11,16,17,42,43,48]

Table 2.4 Results of CAM utilisation studies in the general population

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Eisenberg *et al.* (1993)[2]	USA (1990)	Randomly selected adults (1,539)†	CATI (67%)	33.8% used one of 16 forms of CAM; ‡ 12.3% visited CAM providers; out-of-pocket CAM expenditure was about US$10.3 billion.
Thomas *et al.* (1993)[44]	UK (1993)	Randomly selected adults from UK electoral registers (676)	Self completed questionnaire (73%)	8.5% used one of 6 forms of CAM: acupuncture; chiropractic; homeopathic; hypnotherapy; medical herbalist; and, osteopathy.
MacLennan *et al.* (1996)[9]	South Australia (1993)	Random and representative samples aged 15+ (3,004)	South Australian Health Omnibus Survey, face-to-face interview (73%)	48.5% used one of 11 forms of CAM. 20.3% visited CAM practitioners; total CAM expenditure was A$930 million.
Millar *et al.* (1997)[45]	Canada (1995)	Representative samples aged 15+ (17,626)	National Population Health Survey: personal interview (n/m)	15% had consulted some forms of CAM practitioner.
Paramore *et al.* (1997)[15]	USA (1994)	Representative samples, all ages (3,450)	National Access to Care Survey: CATI (75%)	24.4% visited practitioners for one of 4 forms of CAM: chiropractic; therapeutic massage; relaxation techniques; and, acupuncture.
Astin (1998)[46]	USA (n/m)	Randomly selected adults (1,035)	National Family Opinion Survey: mail survey (69%)	40% used one of 17 forms of CAM.
Eisenberg *et al.* (1998)[3]	USA (1997)	Randomly selected adults (2,055)	CATI (60%)	42.1% used one of 16 forms of CAM; 19.5% visited CAM providers; out-of-pocket CAM expenditure was about US$27.0 billion.

CATI: computer assisted telephone interview. n/m: not mentioned.
* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.
† Adults: 18 years of age or older. ‡ refers to the use of at least one of the listed forms of CAM.

Table 2.4 Results of CAM utilisation studies in the general population (continued)

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Landmark Report (1998)[41]	USA (1997)	Randomly selected adults with health insurance coverage† (1,500)	Telephone interview (n/m)	42% used some forms of CAM.
Druss *et al.* (1999)[47]	USA (1996)	Randomly selected adults† (16,068)	The US Medical Expenditure Panel Survey: CAPI, (77.7%)	8.3% visited one of 12 types of CAM practitioner during 1996.
Ramsay *et al.* (1999)[6]	Canada (1997)	Randomly selected adults† (1,500)	CATI (25.7%)	50% used one of 22 forms of CAM; out-of-pocket CAM expenditure was about CAD$3.8 billion.
Ernst *et al.* (2000)[17]	UK (1999)	Randomly selected adults† (1,204)	Telephone interview (no record was kept of those declined to participate)	20% used any CAM; CAM expenditure was £1.6 billion.
Millar *et al.* (2001)[48]	Canada (1998/99)	Representative adults† (14,150)	National Population Health Survey: personal interview with 1994/95 survey subjects (88.9%)	17% had consulted CAM practitioners (forms of CAM were not presented).
Thomas *et al.* (2001)[5]	UK (1998)	Randomly selected adults† (5,010)	Postal questionnaire (59%)	28.3% used one of 8 forms of CAM.13.6% visited CAM practitioners; out-of-pocket expenditure on visits to CAM practitioners was £580 million.
MacLennan *et al.* (2002)[10]	South Australia (2000)	Random and representative samples aged 15+ (3,027)	South Australian Health Omnibus Survey: face-to-face interview (70.4%)	52.1 % used one of 9 forms of CAM. 23.3% visited CAM practitioners; total CAM expenditure was A$2.3 billion.

CATI: computer assisted telephone interview; CAPI: computer assisted personal interview. n/m: not mentioned.
* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.
† Adults: 18 years of age or older.

Table 2.4 Results of CAM utilisation studies in the general population (continued)

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Menniti-Ippolito *et al.* (2002)[43]	Italy (1999)	Representative samples, all ages (70,898)	A national Institute of Health Survey: face-to-face interviews (n/m)	15.6% of Italians used CAM during 1997-1999.
Ni *et al.* (2002)[4]	USA (1999)	Representative adults† (30,801)	National Health Interview Survey: CAPI (70%)	28.9% used one of 12 forms of CAM.
Yamashita *et al.* (2002)[7]	Japan (2001)	Randomly selected samples aged 20+ (1,000)	CATI (23%)	76% used one of 11 forms of CAM; out-of-pocket expenditure was US$153 per participant.
Barnes *et al.* (2004)[1]	USA (2002)	Representative adults† (31,044)	National Health Interview Survey: CAPI (74.3%)	62.1% used one of 27 forms of CAM; when prayer specific for health reasons was excluded, it was 36%.
Thomas *et al.* (2004)[16]	UK (2001)	Representative samples aged 16+ (1,794)	Omnibus survey: face-to-face interview (65%)	10% visited one of 23 types of CAM practitioner.
Nielsen *et al.* (2005)[42]	Denmark (2000)	Representative samples aged 16+ (16,690)	Danish Health and Morbidity Survey: face-to-face interview (74.2%)	14% used CAM in the past 14 days (no individual forms of CAM were asked).
MacLennan *et al.* (2006)[11]	South Australia (2004)	Random and representative samples aged 15+ (3,015)	South Australian Health Omnibus Survey: face-to-face interview (71.7%)	52.2% used one of 8 forms of CAM; 26.5% visited CAM practitioners; total CAM expenditure was A$1.8 billion.

CATI: computer assisted telephone interview; CAPI: computer assisted personal interview. n/m: not mentioned.
Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.
† Adults: 18 years of age or older.

Table 2.5 An overview of CAM utilisation studies included in the systematic reviews

Published studies	Reviewed by				Reason for not being reviewed in this thesis
	Ernst (2000)	Harris (2000)	Wootton (2001)	This thesis	
Haidinger (1988)[53]	√				Paper published in German
Yung (1988)[58]		√			Regional study in UK
Eisenberg (1993)[2]	√	√	√	√	
Thomas (1993)[44]		√		√	
Vaskilampi (1993)[55]		√			Published as a book chapter
Verhoef (1994)[56]		√			Rural study in Canada
Vickers (1994)[57]	√				Reported results from the 1993 Thomas study
MacLennan (1996)[9]	√	√		√	
Emslie (1996)[52]	√				Regional study in UK
Bernstein (1997)[49]		√			Subjects were aged 45-75
Chi (1997)[51]	√				Chinese medicine only
Haussermann (1997)[54]	√				Paper published in German
Millar (1997)[45]	√	√		√	
Paramore (1997)[15]	√	√	√	√	
Astin (1998)[46]	√		√	√	
Burg (1998)[50]		√			Regional study in the US
Eisenberg (1998)[3]	√	√	√	√	
Landmark Report (1998)[41]	√	√	√	√	
Druss (1999)[47]			√	√	
Ramsay (1999)[6]				√	
Ernst (2000)[17]				√	
Millar (2001)[48]				√	
Thomas (2001)[5]				√	
MacLennan (2002)[10]				√	
Menniti-Ippolito (2002)[43]				√	
Ni (2002)[4]				√	
Yamashita (2002)[7]				√	
Barnes (2004)[1]				√	
Thomas (2004)[16]				√	
Nielsen (2005)[42]				√	
MacLennan (2006)[11]				√	
No. of studies	12	12	6	21	

Study Design and Methods

All except the three Australian studies were conducted at a nationwide level. These 21 studies investigated CAM use by a total of 227,086 people in seven countries: eight studies were conducted in the US (and included a total of 87,492 participants), [1-4,15,41,46,47] four studies in the UK[5,16,17,44] (8,684 participants); three studies in Canada[6,45,48] (33,276 participants) and three studies in Australia[9-11] (9,046 participants); the remaining three studies were in Denmark[42] (16,690 participants), Italy[43] (70,898 participants) and Japan[7] (1,000 participants). The median sample size for all the studies was 3,015. However, the median sample size decreases to 1,500 when health surveys not specifically for CAM are excluded.

Over half (13 in total) of the studies were conducted as a supplement to a national health survey. In most studies, data were collected through postal questionnaires (two studies in the UK and one in the US), telephone interviews (seven studies), or face-to-face interviews (11 studies). In general, the sample selection methods used to ensure proper representation of the study populations were rigorous. The majority (90%) of the studies targeted the adult populations, defined in different countries as 15+, 16+, 18+, or 20+. The Italian study,[43] with a maximum sample size of 70,898, included all children and adults. A recent Australian study[11] also asked questions about CAM use by children (through their households' adult participants). In general, the populations represented in these studies are considered to be appropriately specified. The overall response rates range from 23% to 88.9%. However, the two highest response rates were obtained from sub-sample interviews with previous national surveys. When these are excluded, the response rates ranged from 23% to 75%, with a mean of 63%. Four studies did not provide a response rate.

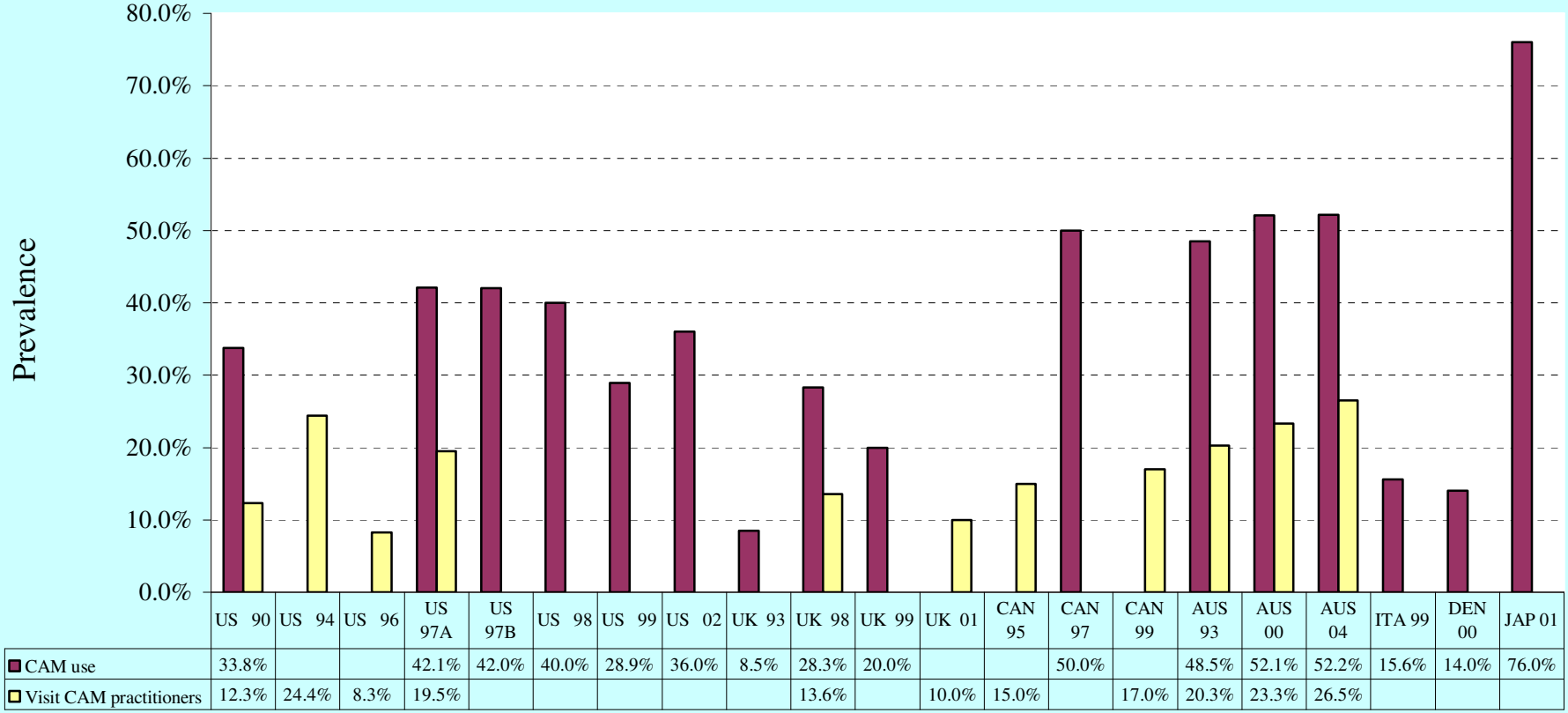
Results of CAM Utilisation Studies

The majority of studies (16 in total) employed a list of CAM to estimate overall prevalence. The types of CAM modalities ranged from four[15] to 27 forms.[1] Similarly, in the UK, the number of CAM investigated were six, eight and 23 in 1993, 1998 and 2001, respectively.[5,16,44] Thus, the prevalence presented in Figure 2.1 does not taken account of the comprehensiveness or totality of CAM, and should be interpreted with caution.

The overall prevalence of CAM varied between 8.5% in the UK in 1993[44] and 72% in Japan in 2001.[7] Well over one in three Americans used CAM,[3] and one in two Canadians and Australians were CAM users in the year preceding the relevant studies.[6] Figure 2.1 suggests that the use of CAM, as well as the prevalence of visits to CAM practitioners, has been increasing over the past 15 years. In particular, marked increases were observed in sequential studies in the US (33.8% in 1990[2] to 42.1% in 1997[3]), and UK studies by Thomas *et al.* showed an increase from 8.5% in 1993[44] to 28.3% in 1998.[5] However, only six forms of CAM were investigated in the 1993 UK study,[44] and the authors considered this to be a pilot study aimed at testing the feasibility of the methodologies employed.

The prevalence of visits to CAM practitioners was also reported in the US, UK, Canada and Australia. The lowest prevalence was reported in a 1996 US study (8.3%),[47] and the highest prevalence appeared in a 2004 Australian study (26.5%).[11] Overall prevalence on both CAM use and visits to CAM practitioners was commonly estimated over a one-year period (preceding to the survey), except the 1999 Italian study,[43] which obtained prevalence over a two-year period, and a Danish study in 2000,[42] which were based on a 14-day prevalence.

Data on total costs and out-of-pocket expenditure have also been extracted from these studies, where available. The substantial costs drew considerable comment in some studies. For example, CAM expenditure in the US increased by 45%, reaching US$ 21 billion in 1997.[3] Moreover, from 1993 to 2000, the overall CAM costs in Australia had more than doubled to A$2.3 billion; and in 2000, Australians paid out-of-pocket four times more for CAM than their contributions for all pharmaceuticals.[10] In Canada, out-of-pocket expenditure was about $3.8 billion Canadian dollar in 1997.[6]



	US 90	US 94	US 96	US 97A	US 97B	US 98	US 99	US 02	UK 93	UK 98	UK 99	UK 01	CAN 95	CAN 97	CAN 99	AUS 93	AUS 00	AUS 04	ITA 99	DEN 00	JAP 01
CAM use	33.8%			42.1%	42.0%	40.0%	28.9%	36.0%	8.5%	28.3%	20.0%			50.0%		48.5%	52.1%	52.2%	15.6%	14.0%	76.0%
Visit CAM practitioners	12.3%	24.4%	8.3%	19.5%						13.6%		10.0%	15.0%		17.0%	20.3%	23.3%	26.5%			

Figure 2.1 Prevalence of CAM use in seven countries

Note: Years were at the time of conducting studies, which are different from the dates of publication
US: United States; UK: United Kingdom; CAN: Canada; AUS: Australia; ITA: Italy; DEN: Denmark; JAP: Japan.
US90, US97A (Eisenberg *et al.*[2,3]); US94 (Paramore *et al.* [15]); US96 (Druss *et al.*[47]); US97B (Landmark report[41]); US98 (Astin[46]); US99; (Ni *et al.*[4]); US02 (Barnes *et al.*[1]); UK93, UK98, UK01 (Thomas *et al.*[5,16,44]); UK99 (Ernst *et al.*[17]); CAN95, CAN99 (Millar *et al.* [45,48]); CAN97 (Ramsay *et al.*[6]); AUS93, AUS00, AUS04 (MacLennan *et al.*[9-11]); ITA99 (Menniti *et al.*[43]); DEN00 (Nielsen *et al.*[42]); JAP01 (Yamashita *et al.*[7]).

2.3.2.3 Discussion

It is apparent that there are considerable uncertainties about the true prevalence of CAM among the general populations of countries. Uncertainties are even observed within countries. As discussed earlier, many of these uncertainties arise because of the complex problem of defining CAM and the modalities it includes. Nevertheless, when specific CAM questions were designed as part of a national health survey, it is likely that professional social scientists and statisticians were employed for the development of instruments and for data analyses.

Most studies provided estimates on the prevalence of use of individual forms of CAM, except for a 2000 Denmark study[42] and a 1999 Canadian study.[48] Two therapies (acupuncture and chiropractic) were included in all studies and, perhaps, are the most frequently reported CAM modalities, together with massage, herbal medicine and multivitamins. The inclusion or exclusion of these individual therapies can potentially impact heavily on estimation of the overall prevalence of CAM.[19] To avoid confusing survey participants it is also necessary that each specific CAM modality be defined. The use of a show-card in a face-to-face personal interview or the provision of a detailed list of all forms of CAM in a telephone interview or postal questionnaire would gather a more precise measurement on prevalence. In contrast, asking participants to voluntarily provide all the names of CAM they have used would be less likely to be comprehensive.

Two published reviews provided additional important information on CAM use in some other countries.[59,60] For example, CAM prevalence data for a number of European countries, such as Germany and Austria.[18] However, many of the papers cited were published in the local language, rather than English and therefore are not included in the current review. In one of the reviews, Fisher and Ward[60] summarised such European CAM utilisation data and

concluded that a high percentage of the general public in Belgium (31%), France (49%), Germany (46%), the Netherlands (20%), Denmark (23.2%), and Sweden (25%) were CAM users. However, it should be noted that these figures are somewhat higher than those given in Figure 2.1.

Since the pioneer research on CAM use published by the Harvard research group in 1993,[3] the US has been leading the way in investigating CAM utilisation among the general public. More recently, employing the most rigorous data collection methods (i.e. computer-assisted personal interviews with representative residents), a number of studies were conducted as part of the US National Health Surveys.[1,4] On the other hand, Australia is one of a few countries that has investigated CAM use in sequential surveys.[9-11] Yet, these were conducted at a state level, so a full picture of Australia's nationwide utilisation was not available. Thus, the current literature review includes CAM utilisation studies only at a national level, with the exception of Australian regional studies.

Additional common outcome measurements of these reviewed articles are the characteristics of CAM users, concurrent use of CAM and conventional medicine, attitudes towards such use and communication between patients, CAM practitioners and Western medicine practitioners. Substantial findings on these matters were also collected and are discussed in the relevant chapters in this thesis, in comparison with the results of the recently completed CAM Australia national study in 2005. In all, the most critical problem in producing the true prevalence of the study population is a clear definition of CAM, specifically, the classification of CAM modalities. Further high quality research is needed, preferably replicated studies supplementary to a national health survey.

2.3.3 CAM Utilisation in Australia: A Systematic Review

This review aimed to systematically examine the current status of use CAM in Australia, in particular, the profile of CAM use among the general population, among specific patients groups and among the health professionals.

2.3.3.1 Methodology

When identifying worldwide CAM utilisation studies, particular attention was paid to Australian literature. A modified version of the search strategy (see Table 2.3) was used to identify CAM utilisation studies that had been conducted in Australia with additional search limitations (Table 2.6). The two approaches are not mutually exclusive when identifying literature on CAM surveys. It was expected that the search limitation on "Australian studies only" did not capture all Australian studies. The final search and reference selection process took place in December 2005.

Table 2.6 Additional search strategy to identify Australian CAM utilisation studies

1. exp Australia/
2. exp South Australia/
3. exp Western Australia/
4. exp Victoria/
5. exp New South Wales/
6. exp Queensland/
7. exp Northern Territory/
8. exp Australian Capital Territory/
9. exp Tasmania/
10. (Australia or south Australia or western Australia or Victoria or New South Wales or Queensland or Northern territory or Australian Capital Territory or Tasmania).tw.
11. (Melbourne or Sydney or Brisbane or Adelaide or Perth or Darwin or Canberra or Hobart).tw.
12. or/1-11
13. 12 and 28 [of Table 2.3]

The new-article alert function and a reference cross-check were also included. Most of the previously mentioned inclusion and exclusion criteria (see Chapter 2.3.2.1) are applied to identify Australian studies, except that studies on CAM use on a subpopulation (e. g. cancer patients and the older population) are included in the Australian literature review. Studies on the general population and specific populations are presented separately.

2.3.3.2 Results

The initial search identified over 500 articles. After reading titles and abstracts (to clarify whether the study was conducted in Australia), a total of 122 articles were included for further examination and were read in full. These articles were then sorted in four categories to facilitate the article selection process: 1) CAM use in a general population; 2) CAM use in a defined population; 3) CAM used by other populations, such as health professionals, and 4) articles requiring further clarification, for which opinion from an independent researcher was sought. In addition, a study conducted in Western Australia[61] and another in Melbourne[62] were also identified. These studies[61,62] also reported data on the use of CAM in the general population. However, data from both studies were collected from in-street participants; such a convenience sampling method did not satisfy the inclusion criteria for the current review.

Six articles were identified by citation tracking of relevant articles. One additional article was obtained in 2006 when notified by a new-article alert. Thus, a total of 38 studies were included in the current review. These included five studies on CAM use by the Australian general population, [9-11,37,38] seven studies on cancer patients,[63-69] eight studies on children and women (including patients),[70-77] 12 studies on people with other diseases other than cancer, [78-89] and six articles on other (non-clinical) populations.[90-95] The key data of included articles are summarised in Table 2.7 to Table 2.11

Study Design and Methods

The 38 Australian studies represented CAM use by a subtotal of 9,991 of the general population, 2,572 cancer patients, 386 children patients, 54,708 women and women patients, 1,841 other patients (exclude Parslow's study; see Table 2.10 for the reason) and 2,729 other defined populations, in five states and one territory. Six studies were conducted on a nationwide basis (and included a total of 56,691 participants), 12 studies in New South Wales (NSW); eight in South Australia (SA); six in Victoria (VIC); three in Queensland (QLD), two in Western Australia (WA) and one in the Australian Capital Territory (ACT).

In terms of the data collection methods, the majority of these studies (25 in total) used traditional questionnaires (13 by mail, two completed by patients in the clinic waiting room and 10 completed by clinic patients in their own time). Eleven studies introduced face-to-face interviews (including one using a hand-held computer). Two studies employed telephone interviews. The use of CAM by General Practitioners (GP) was investigated by analysing Health Insurance Commission data (Medicare).

The qualities of sample selection methods varied. Studies on the general population targeted randomly selected samples, while studies on clinical or defined populations mainly recruited subjects through convenience sampling (e.g. patients attending clinics, and routine records/questionnaires for hospital inpatients). Questionnaires were also completed by GPs and nurses on their personal use of CAM and also on the CAM used for their patients. Nearly half (44%) the studies on a defined population did not state the ages of their subjects. This may be partially explained by the fact that no age limitation was applied when recruiting patients, particularly cancer patients. The sample size of the majority of the studies on defined

populations was less than 1,000, with the exception of two studies on women. The latter were supplemental analyses of large-scale national longitudinal studies.

It is not surprising that studies on clinical populations tended to achieve a higher response rate than studies on a non-clinical population. This is evidenced by the fact that response rates of four patient-based studies were higher than 90%. Thirteen studies, however, did not state their response rates.

Results of CAM Use among the General Population

As expected, the major results found in this category were Omnibus Health Surveys in a specific state of Australia.[9-11] Through extrapolation, these have been frequently quoted to represent the use of, and expenditure on, CAM in Australia. Two systematic reviews[18,19] on CAM utilisation studies considered the methodology employed in the first 1993 survey[9] to be rigorous. However, the CAM categories used in this survey was somewhat questionable.[18] Such problem has also been observed in two more recent surveys.[10,11]

Two regional studies in New South Wales were identified, with higher prevalence being reported than in the previous South Australian studies (Table 2.7). Kermode's New South Wales study in 1995[38] was based on nutritional products, including 24 vitamin and other supplements, herbal medicine, and homoeopathic medicine (see Table 2.2). Many of these items are not universally considered as CAM. It is also worth noting that the Wilkinson's study[37] was conducted in a rural community in New South Wales. An extraordinarily high prevalence of chiropractic (55.3% of the population had visited chiropractors at least once) was reported in this community. It is by far the highest prevalence of chiropractor visits documented in the international literature.

Common results from the three South Australian[9-11] and two New South Wales studies[37,38] suggested that the use of CAM by the Australian general public is not less than 50%, and approximately one in four people have visited a CAM practitioner in a 12-month period. Wilkinson *et al*. reported the highest prevalence of both CAM use (70.3%) and CAM practitioner visits (62.7%).[37] The CAM use was specifically over a 12-month period; however, the period is unclear for CAM practitioner visits. A high prevalence in the use of herbal medicine and multivitamins was most commonly reported. In a recently published study,[11] the South Australian-based research team reported that 39.2% used vitamins, and an additional 13.6% used mineral supplements (excluding calcium, iron or vitamins prescribed by a medical doctor). For provider-based therapy, visits to chiropractors and massage therapists represented the majority of visits. [11]

Table 2.7 CAM use among the Australian general population

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
MacLennan *et al.* (1996)[9]	South Australia (1993)	Random and representative samples, aged 15+ (3,004)	South Australian Health Omnibus Survey: face-to-face interview (73%)	48.5% used one of 11 forms of CAM; 20.3% visited CAM practitioners; total CAM expenditure was A$930 million; 37.6% used vitamins; 9.9% used herbal medicine; 14.9% visited chiropractor.
Kermode *et al.* (1998)[38]	North coast of New South Wales (1995)	Randomly selected adults (645) †	Telephone interview (44%)	64% used CAM at the time of being surveyed; 25% visited CAM practitioner within the last year; while 75% had previously consulted CAM practitioners; 57% used nutritional products; 33% used herbal medicine; 50% visited chiropractor/osteopath.
Wilkinson *et al.* (2001)[37]	Rural region of New South Wales (1999)	Randomly selected adults from electoral database (300)	Postal questionnaire (31.4%)	70.3% used one of 14 forms of CAM; 62.7% visited a CAM practitioner; 68.7% used vitamins and minerals, 26.1% used chiropractic; 55.3% had previously visited a chiropractor.
MacLennan *et al.* (2002)[10]	South Australia (2000)	Random and representative samples aged 15+ (3,027)	South Australian Health Omnibus Survey: face-to-face interview (70.4%)	52.1 % used one of 9 forms of CAM; 23.3% visited CAM practitioners; total CAM expenditure was A$2.3 billion; 36.4% used vitamins; 13.4% used herbal medicine; 16.7% visited chiropractor.
MacLennan *et al.* (2006)[11]	South Australia (2004)	Random and representative samples aged 15+ (3,015)	South Australian Health Omnibus Survey: face-to-face interview (71.7%)	52.2% used one of 8 forms of CAM; 26.5% visited CAM practitioners; total CAM expenditure was A$1.8 billion; 39.2% used vitamins; 20.6% used herbal medicine; 16.7% visited chiropractor.

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey. Key results include two most popular forms of CAM and the highest prevalence of visits to CAM practitioner. † Adults: 18 years of age or older

General Findings of CAM Use by Children and Women Patients

CAM usage in children and women patients is another area in which the prevalence has frequently been investigated. Previous systematic reviews have concluded that there is a generally high and possibly increasing prevalence of CAM use among paediatric populations.[96] A number of national surveys have also consistently found that women are more likely to use CAM than men.[39] A total of ten studies were identified. Eight were on children and women with a medical condition other than cancer (Figure 2.2 and Table 2.8), two were on paediatric and women cancer patients[68,69] (Table 2.9).

A considerably high prevalence of CAM was also found in Australian studies of children and women patients (Figure 2.2). The only study estimates CAM use at the time of study found a high prevalence of 35.9% among gastroenterology outpatient children.[71] Three studies were concerned with the lifetime use of CAM, that is, use of CAM at least once previously. Over half (51.7%) of asthmatic children in Sydney[73] and approximately half (46%) of South Australian children with cancer had previously used CAM.[68] A lower lifetime-use rate (33%) was reported among non-surgical hospital inpatient children in Victoria.[72] However, the above findings may need to be interpreted with extreme caution, as the sample size for all the studies was rather small (median sample size=106), and the measurement of lifetime use may have a higher chance of introducing great recall bias.

Female patients in Australia appeared to favour CAM products the most. A study by Gollschewski on 886 randomly selected menopausal women in Queensland found that over 82.5% had previously used CAM.[76] Importantly, and a safety concern, over 73% women used CAM products during pregnancy, according to an Adelaide-based study in 2000.[70] In this study, the most frequently used products were herbal medicine (56%) and aromatherapy oils

(40%). Specifically, chamomile, a form of herbal product, and lavender aromatherapy oil were most favoured among pregnant women.

CAM prevalence among healthy women was revealed in two large-scale national surveys. A 1996 study on 41,817 women aged 18-23, 45-50 and 70-75 found that 26.3% had visited CAM practitioners within a 12-month period. Later, in 1998, a follow-up study on the same group of women aged 45-50 further revealed that over 29% had consulted CAM practitioners in the 12 months preceding the survey.

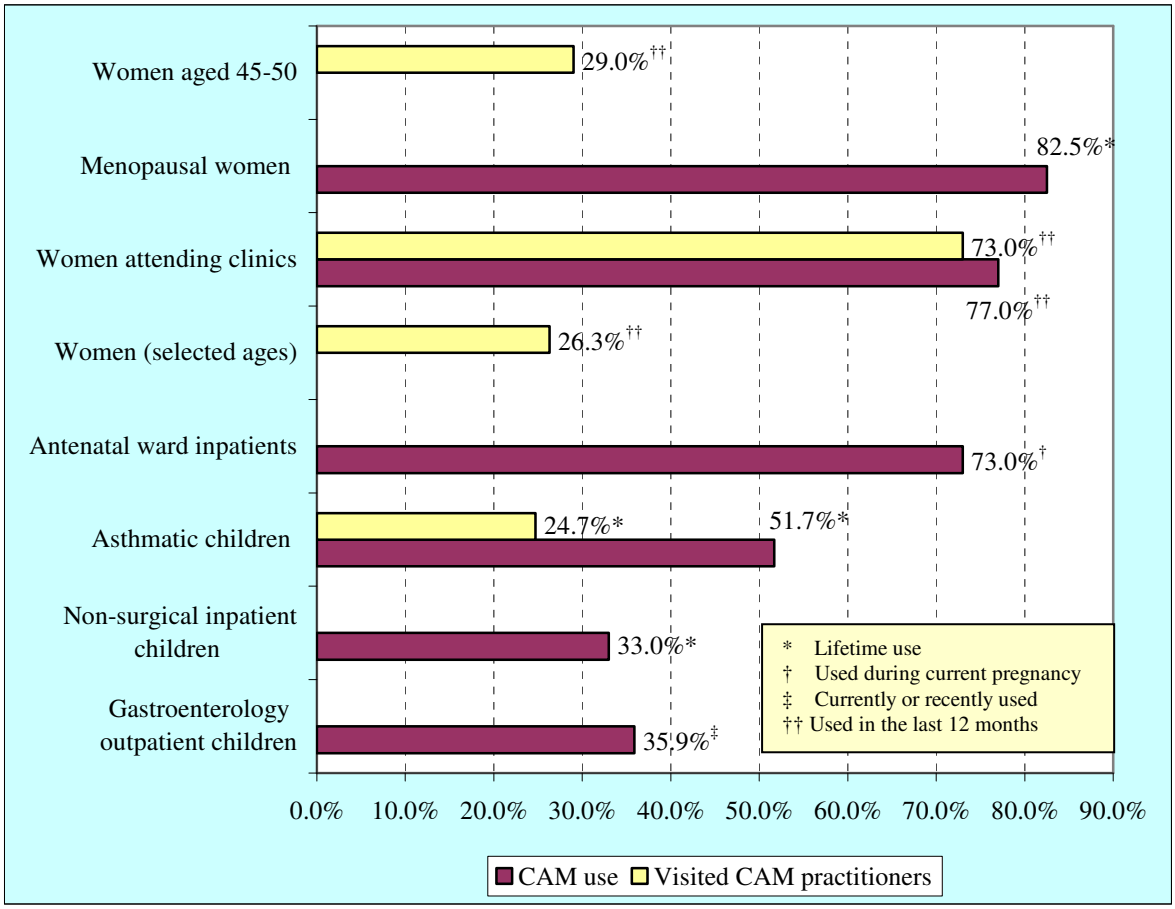


Figure 2.2 Prevalence of CAM use by children and women (patients) in Australia

Table 2.8 CAM use by children and women (patients) in Australia

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Byrne *et al.* (2002)[70]	A teaching hospital in Adelaide (2000)	Inpatients of an antenatal ward aged 20-43 (48)	Interview with a standard questionnaire (73%)	73% used CAM during current pregnancy.
Day *et al.* (2002)[71]	South East Sydney (2001)	Gastroenterology outpatient children , aged <16 (92)	Self-completed questionnaire (80%)	35.9% were taking CAM at the time of the survey.
Fong *et al.* (2002)[72]	Bendigo base hospital in Victoria (1999)	Non-surgical inpatient children (120)†	Structured questionnaire completed by parents (88%)	33% had previously used one of 15 forms of CAM.
Shenfield *et al.* (2002)[73]	A teaching hospital in Sydney (1998)	Asthmatic children, aged <19 (174)	Structured questionnaire (92%)	51.7% used CAM in their lifetime and 24.7% visited CAM practitioners in their lifetime.
Adams *et al.* (2003)[74]	Australia (1996)	Women aged 18-23, 45-50 and 70-75 (41,817)	Australian Longitudinal Study on women's health: postal questionnaire (n/m)‡	Visited CAM practitioners were 19% (18-23 yo); 28% (45-50 yo), and 15% (70-75 yo); overall, 26.3% visited CAM practitioners.
Biddle *et al.* (2003)[75]	Wollongong, New South Wales (n/m)‡	Women attended health practitioner services, aged 15-60 (503)	Postal questionnaire (32%)	77% used CAM; 73% visited CAM practitioners.
Gollschewski *et al.* (2004)[76]	Southeast Queensland (2001)	Randomly selected menopausal women, aged 47-67 (886)	Postal questionnaire (59%)	82.5% had previously used CAM.
Sibbritt *et al.* (2004)[77]	Australia (1996-1998)	Women aged 45-50 (11,454)	Australian Longitudinal Study on women's health: postal questionnaire (87%)	29% consulted CAM practitioners.

*Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.
† Age was not state in the study. ‡ n/m: not mentioned

General Findings on CAM Use for Cancer Treatment

Studies on the use of CAM by cancer patients have been widely published.[97] This is also the case for Australian literature, with seven studies published in the last 10 years (Table 2.9). With the exceptions of the 1999 women's health longitudinal study and a study reviewing Queensland Cancer Registry records, the remaining five studies recruited patients from hospitals and clinics. Such a convenience sampling method is not necessarily a problem for studies on clinical patients, provided they are rigorously designed.

Data of CAM prevalence collected on cancer patient studies were varied. Most studies were interested in the use of CAM at any time in the past, rather than in its use over the preceding year. As shown in Figure 2.3, the prevalence of CAM use ranges from 12% by colorectal cancer patients[65] to 52% by a mixed group of cancer patients.[66] It is interesting to note that this highest prevalence was the only study that based on the estimated prevalence after diagnosis of cancer. Two studies reported on the prevalence of cancer sufferers seeking treatment from CAM practitioners. In one study on those with advanced cancer, 11% sought treatment from CAM practitioners,[64] and in another, 14.5% of female with cancer sought such treatment.[69] Unfortunately, more than half the studies failed to investigate individual forms of CAM and, importantly, no follow-up studies were conducted to reveal the trend of CAM use by cancer patients over time.

Two studies reported the costs related to CAM use. Begbie's 1996 study[63] estimated that the median annual cost was $530 per user, with a maximum of $20,000 per annum per user. Two out of three (64.3%) users felt they were getting value for their money. Miller[66] also found that CAM users spent a substantial amount of money over $1,000, on items such as herbal medicine, high-dose vitamins and aromatherapy, after being diagnosed with cancer. For most therapies, patients would recommend them to others and would take the same therapy again.

Table 2.9 CAM use for cancer treatment in Australia

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Sawyer *et al.* (1994)[68]	A hospital in South Australia (1988-1992)	Children with cancer (48)†	Questionnaires completed by parents (n/m)‡	46% had previously used CAM.
Begbie *et al.* (1996)[63]	Two clinics at two hospitals in Sydney (1995)	Cancer patients, all ages (319)	Self-administered questionnaire (62%)	21.9% had previously used CAM.
Miller *et al.* (1998)[66]	A teaching hospital in Sydney (1998)	Cancer patients (156) †	Questionnaire in waiting room (90%)	52% used CAM after being diagnosed.
Correa-Velez *et al.* (2003)[64]	Queensland (n/m) ‡	Advanced cancer patients, aged 20+ (111)	Cancer Registry records: follow up interview every four to six weeks (88%)	32% used CAM in one week preceding the survey; 11% visited CAM practitioners on a regular basis.
Sibbritt *et al.* (2003)[69]	Australia (1999)	A representative sample of women, aged 73-78 (9,375 includes 1,623 cancer patients)	Australian longitudinal study on women's health: postal questionnaire (n/m) ‡	14.5% women with cancer consulted CAM practitioners; 11.6% women without cancer consulted a CAM practitioner.
McGorm *et al.* (2004)[65]	Two large public hospitals in Adelaide (n/m) ‡	Patients with colorectal cancer (100) †	Postal questionnaire (43%)	12% had previously used CAM for colorectal cancer.
Salminen *et al.* (2004)[67]	A cancer institute in Melbourne (1999-2001)	Breast cancer patients (215) †	Questionnaire in waiting room (n/m) ‡	17% had previously used CAM.

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.
† Age was not state in the study. ‡ n/m: not mentioned

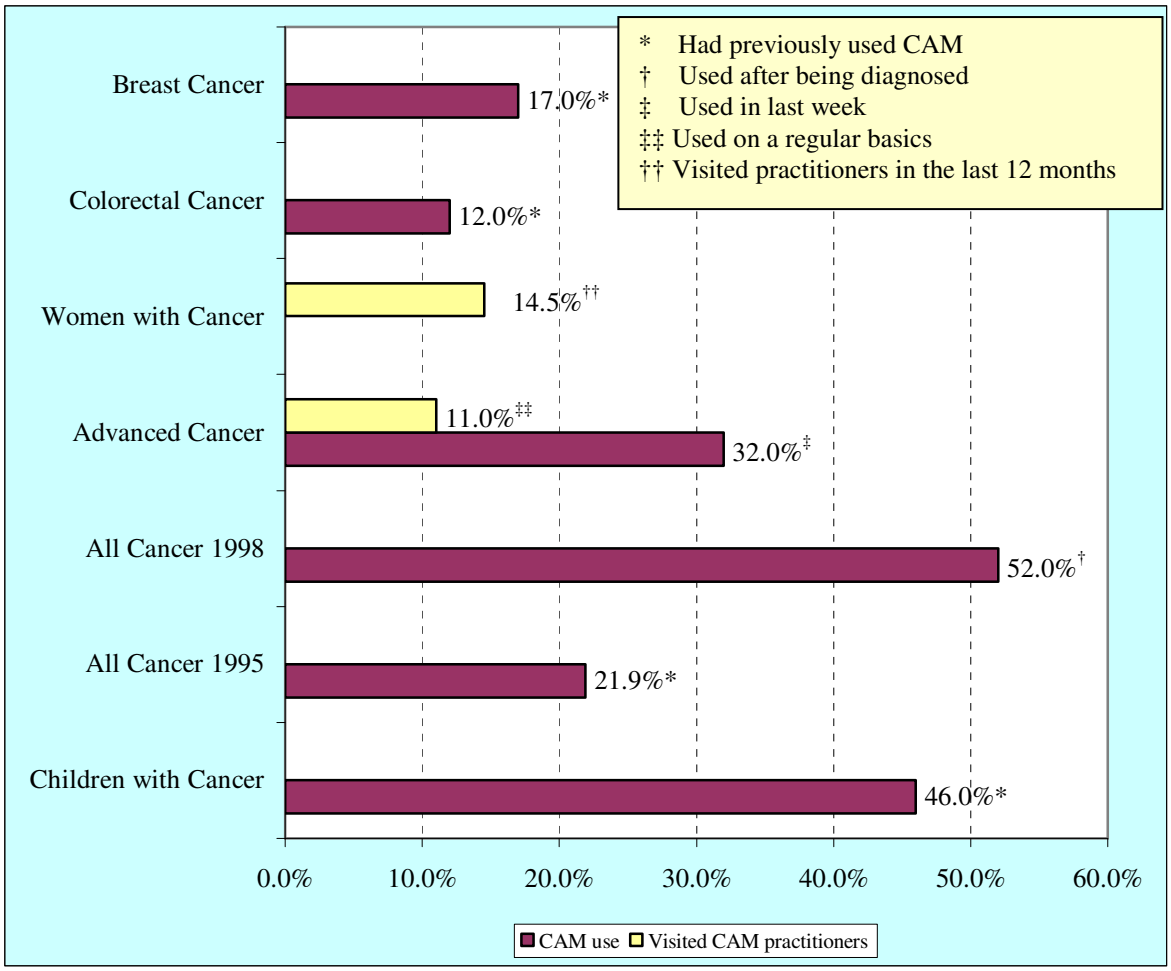


Figure 2.3 Prevalence of CAM use by Australian cancer patients

CAM Use for Treatment of Diseases Other than Cancer

Twelves studies on CAM use by patients other than cancer patients, children and women patients were found (Table 2.10). These represented CAM use by patients with eight different clinical conditions: HIV/AIDS,[80,84] rheumatoid arthritis (RA),[78,82] osteoarthritis,[89] depression,[88] chronic obstructive pulmonary disease (COPD),[87] diabetes,[86] psychiatric problems,[85] cystic fibrosis,[83] and among patients who were attended to two clinical settings: emergency department[79] and hospital.[81] Again, a few studies reported lifetime CAM use (i.e. studies on HIV/AIDS, COPD and depression patients). An overview of all prevalence data is presented in Figure 2.4.

In seven studies, over 50% of those surveyed had previously used CAM on at least one occasion. The highest such prevalence was observed in RA patients in Victoria in 1982 (82% used CAM after being diagnosed, and 52% were using it at the time of the study).[78] A high prevalence among RA patients was further confirmed in a more recent study in 1998.[82] Based on Melbourne RA patients this study found that 67.3% of patients were CAM users. On the other hand, the lowest prevalence (2.9% had previously used CAM) was found in a 2001 study in Canberra and its enviroment.[88] However, this prevalence refers to CAM use by those within a sample of the general population who suffered from depression and/or anxiety, the number of such users being expressed as a percentage of the entire sample. The true prevalence of CAM use by people with depressive or anxiety symptoms remains unclear.

The 1997 and 1999 studies found a similar prevalence of CAM use by HIV/AIDS subjects (56% and 55%, respectively). [80,84] These findings can be considered highly reliable, as studies were based on large samples of HIV/AIDS subjects in Australia. The authors concluded that CAM use was not significantly related to HIV positive individuals having been diagnosed with AIDS (p=0.06).

Table 2.10 CAM use for treatment of diseases other than cancer in Australia

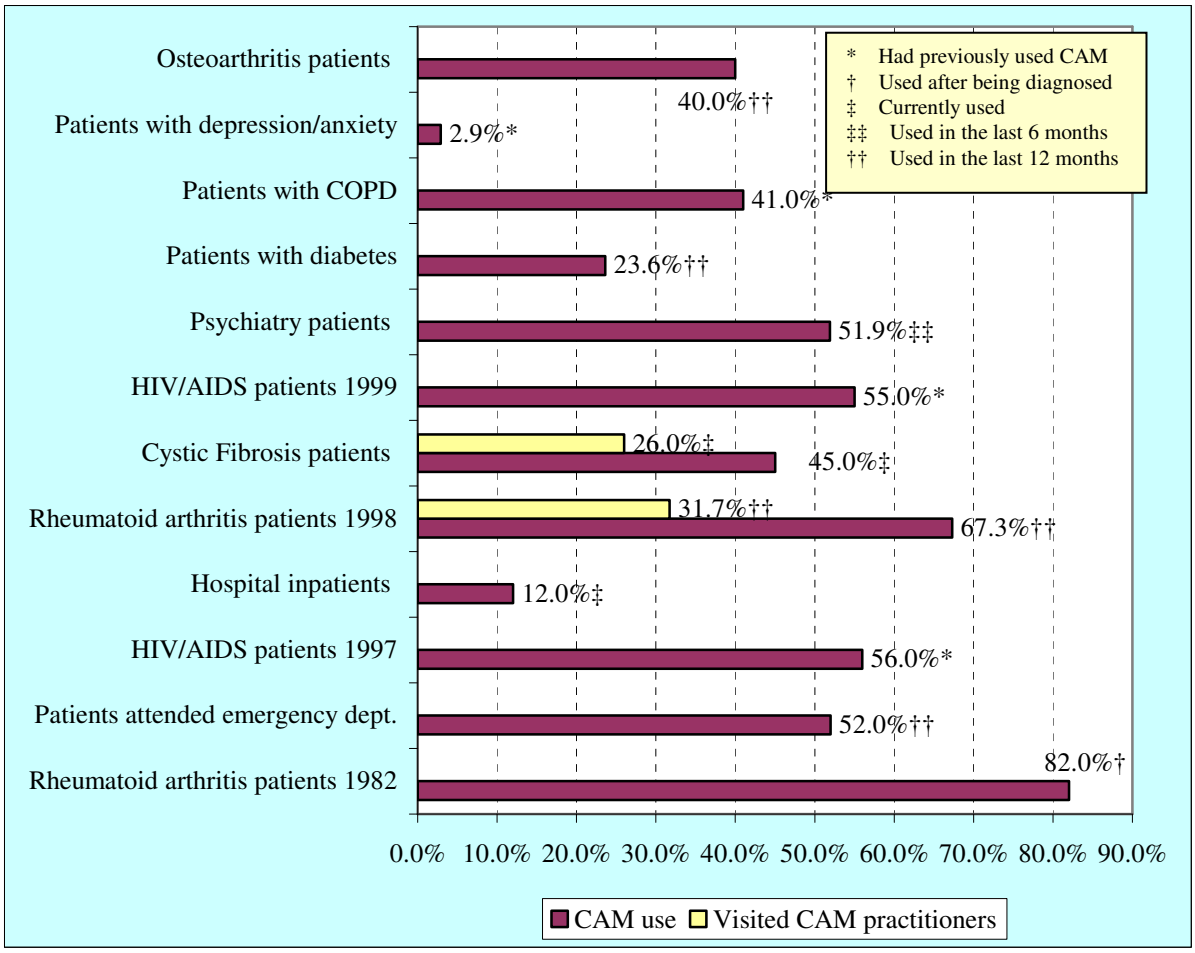
Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Kestin *et al*. (1985)[78]	A teaching hospital in Victoria (1982)	Consecutive patients with rheumatoid arthritis, aged 15+ (90)	Interview in a structured questionnaire (n/m) ‡	82% used CAM after being diagnosed; 52% were using CAM at the time of survey.
Kristoffersen *et al*. (1997)[79]	A Sydney teaching hospital (1994)	Patients presented to an emergency department, all ages (325)	Interviews guided by a structured questionnaire (98%)	52% used CAM; 30.5% used CAM in one week preceding the survey.
Visser *et al*. (2000)[80]	Non-clinical settings in Australia (1997)	Convenience sample of people living with HIV/AIDS (925)	Postal questionnaire (n/m)‡	56% had previously used CAM.
Welch *et al*. (2001)[81]	A public hospital in Sydney (2000)	Hospital inpatients (511)	Survey as part of the routine medication history (n/m) ‡	12% were using CAM at the time of study.
Buchbinder *et al*. (2002)[82]	A rheumatology clinic in Melbourne (1998)	Community clinic based rheumatoid arthritis patients (101)	Telephone administrated questionnaire (53%)	67.3% used CAM for RA and 31.7% visited CAM practitioners for RA.
Burrows *et al*. (2002)[83]	A hospital in Queensland (2001)	Cystic Fibrosis patients, aged 16+ (83)	Interview-based questionnaire (70%)	70% had previously used CAM and 61% had previously visited CAM practitioners; at the time of survey, 45% used CAM and 26% visited CAM practitioners.

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.
† Age was not state in the study. ‡ n/m: not mentioned

Table 2.10 CAM use for treatment of diseases other than cancer in Australia (continued)

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Visser *et al.* (2002)[84]	Australia (1999)	A total of 8% of total Australian who were living with HIV/AIDS, aged 18-72 (924)	Self -administered survey (n/m)‡	55% had previously used CAM.
Alderman *et al.* (2003)[85]	A South Australian teaching hospital (n/m) ‡	Psychiatry patients (52)†	Structured interviews (93%)	51.9% used CAM in the six months preceding the survey.
Clifford *et al.* (2003)[86]	Western Australia (2001)	Patients with diabetes (351) †	Information obtained a diabetes study: interviews (n/m) ‡	23.6% used CAM.
George *et al.* (2004)[87]	Melbourne (n/m)	Patients with chronic obstructive pulmonary disease [COPD] (173) †	Data obtained through a nested survey in a COPD randomised controlled trial (n/m) ‡	41% had previously used CAM.
Parslow *et al.* (2004)[88]	Regional areas in the Australian Capital Territory (1999-2001)	Subjects selected from electoral rolls from those aged 20-24 in 1999, aged 40-44 in 2000 and aged 60-64 in 2001 (7,485)	Longitudinal interviews by using a hand-held computer (n/m) ‡	2.89% had previously used CAM to treat depression or anxiety (number of people with health conditions unclear).
Zochling *et al.* (2004)[89]	Sydney (1994-1999)	Osteoarthritis patients (341) †	Three prospective monthly-diaries and 12 month follow-up (n/m) ‡	40% used CAM.

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.
† Age was not state in the study. ‡ n/m: not mentioned



COPD: chronic obstructive pulmonary disease

Figure 2.4 Prevalence of CAM use for treatment of diseases other than cancer in Australia

CAM Use by Other Populations

With the large number of studies having investigated CAM use among the general population and clinical patients, researchers have also been interested in the personal use of CAM by health professionals and for their patients. With the global trend of increasing use and practice of alternative forms of medicine, CAM use by Western medical doctors is of particular interests. Studies were also carried out among other health professionals, such as nurses, midwives and university health sciences students (Table 2.11) The six studies identified were conducted in the states of New South Wales, Victoria, Western Australia, South Australia and nationwide by means of postal questionnaires and self-completed questionnaires.

The majority of GPs had referred their patients to a number of common forms of CAM practitioners, such as acupuncturists and massage therapists. Based on 488 randomly selected GPs in Victoria, Pirotta[91] found 93% of them had referred their patients at least once to a CAM practitioner, and 82% had referred them at least a few times a year. A recent nationwide GP study[95] in Australia further revealed that 76% and 72% of GPs had referred their patients to acupuncturists or massage therapists, respectively, at least once a month.

The use of CAM by the GPs themselves was also common; 26% had used massage and 21% had used acupuncture.[95] A high prevalence of personal use was also reported among nurses (74% in the past 12 months)[93] and university nursing, pharmacy and biomedical sciences students (78% in the past 12 months).[92] Among the individual forms of CAM that were found to be most popular were multivitamins and herbal medicine, a trend similar to CAM use by the general population and clinical patients. Moreover, an extremely high prevalence of aromatherapy use was found among nurses (44.1%) and students (nursing students: 32.5%, pharmacy students: 34.5% and biomedical sciences students: 35.1%).[92]

Table 2.11 CAM use in other populations in Australia

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Hall *et al.* (2000)[90]	Perth metropolitan area (1998)	Randomly selected general practitioners [GPs] (282)	Cross-sectional survey: postal questionnaire (74.8%)	75% formally referred patients to one of 10 CAM practitioners in the previous 9 months.
Pirotta *et al.* (2000)[91]	Victoria (1997)	Randomly selected GPs (488)	Postal questionnaire (64%)	93% referred at least once and 82% referred at lest a few times a year for a CAM therapy.
Wilkinson *et al.* (2001)[92]	New South Wales (1999)	University students in nursing, pharmacy and biomedical sciences (271)	Self completed questionnaire (72%)	78% used CAM. 56.3% visited CAM practitioners.
Wilkinson *et al.* (2002)[93]	New South Wales (2000)	Nurses (832)	Postal questionnaire (n/m)‡	74% used CAM for themselves. 38% used CAM for patients.
Gaffney *et al.* (2004)[94]	South Australia (n/m)	Obstetricians (75) and midwives (145)	Postal questionnaire (78%)	68% obstetricians and 78% midwives had formally referred patients to use CAM.
Cohen *et al.* (2005)[95]	Australia (2004)	GPs (636)	Postal questionnaire (33.2%)	The top three popular forms of CAM used by GP themselves were massage (26%), vitamin and mineral (13%) and acupuncture (12%). When using in their practices, these were acupuncture (18%), meditation (18%) and massage (11%). 76% and 72% GP referred patients to acupuncturists or massage therapists, respectively, at least once a month.

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey. ‡ n/m: not mentioned

2.3.3.3 Discussion

The use of CAM among the general Australian population had not been comprehensively reviewed at the time of writing this thesis. Utilisation studies on clinical conditions, in particular, cancer patients, children and women patients were the most popular.

The methodological quality of the Australian studies is varied. In general, there is a lack of a standard approach to collect data. As with CAM utilisation studies outside Australia, the extent of CAM modalities included in the totality of CAM prevalence is the key challenge for a comparable conclusion to be drawn.

Despite these shortcomings, the prevalence of CAM use in Australia, particularly aromatherapy, herbal medicine and natural products, is higher than in other Western countries, noticeably among cancer patients and those with other defined clinical conditions.

It is important to note that in Australia common forms of CAM therapy are covered, to various levels by private health insurance funds. When conventional medicine cannot offer an effective cure for a disease, patients are turning to other CAM especially as more scientific evidence is becoming available for certain CAM therapies. This is evidenced by the fact that over half (58%) of patients with colorectal cancer believed that a hospital should provide information about CAM, although they did not necessarily use it.[65] In general, there is a lack of detailed information on the forms of CAM being used by Australians, and the efficacy of these treatments for specific clinical conditions. In this respect, poor communication between patients and practitioners,[98] is of safety concern.

2.3.4 Chinese Medicine Utilisation Worldwide: A Systematic Review

This review aimed to systematically examine published surveys on the use of Chinese medicine (CM) by the general population. Specific information about CM was extracted from identified CAM surveys (see Chapter 2.3.2.2) that included CM as one of the CAM modalities.

2.3.4.1 Methodology

Chinese medicine (CM) is classified as an alternative medical system by the US National Center for Complementary and Alternative Medicine (NCCAM).[36] It includes not only the commonly known acupuncture, Chinese herbal medicine and Chinese therapeutic massage but other modalities, such as Qigong and Chinese medicine dietary therapy. Many Western countries, including Australia, have experienced tremendous growth in the use of Chinese medicine, particularly acupuncture and some popular herbs, over the past decades. However, very few studies have focused exclusively on the totality of all CM modalities. The use of CM as a defined health-care system has not been specifically investigated. Thus, the current review was aimed to systematically extract CM data from surveys.

For the purpose of this review, CM was categorised into five major domains: 1) acupuncture, electro-acupuncture and moxibustion; 2) Chinese herbal medicine; 3) Chinese therapeutic massage; 4) Qigong, Tai Chi and martial art; and 5) Chinese medicine dietary therapy.

The database literature search looked for two types of studies: 1) those that explicitly stated the prevalence of any one form of CM or CM as a whole [Type I literature], and 2) those in which CM information was embedded in utilisation studies on general CAM use among

random or representative samples of the general population [Type II literature]. The search strategy to identify Type I CM utilisation literature is illustrated below (Table 2.12). This was used in combination with the search strategy for general CAM as presented in Table 2.3.

Table 2.12 Search strategy to identify type I literature on Chinese medicine utilisation

1. exp Medicine, Chinese Traditional/
2. exp Drugs, Chinese Herbal/
3. exp Medicine, Oriental Traditional/
4. exp Plants, Medicinal/
5. exp Drugs, Non-Prescription/
6. (medicin$ adj05 (chines$ or oriental$ or tibetan$)).tw.
7. (herb$ medicin$ or medicin$ herb$).tw.
8. (plant$ medicin$ or medicin$ plant$).tw.
9. herb$.tw.
10. or/1-9
11. Acupuncture/
12. exp Acupuncture Analgesia/
13. exp Acupuncture, Ear/
14. exp Acupuncture Points/
15. exp Acupuncture Therapy/
16. exp Electroacupuncture/
17. exp Meridians/
18. (acupuncture$ or electroacupuncture or electro-acupuncture or acupressure or acupoint$ or ((meridian or non-meridian or trigger) adj05 point$)).tw.
19. or/11-18
20. exp Moxibustion/
21. (moxibustion or moxa or Ai Jiu).tw.
22. exp Massage/
23. (chines$ adj05 massage).tw.
24. (Tuina or Tui na or An mo).tw.
25. exp Tai Ji/
26. (Tai Ji or Taiji Tai Chi or Taichi).tw.
27. exp Martial Arts/
28. (Gong Fu or Gongfu).tw.
29. (Qi Gong or Qigong).tw.
30. (chines$ adj05 (diet$ therap$ or nutrition$ therap$)).tw.
31. or/20-30
32. 10 or 19 or 31

The language of the publications included was limited to English or Chinese. To qualify for inclusion, papers had to use survey methods: either a questionnaire or interview to collect the information of CM use, and they had to meet one of the following selection criteria:

1. The study estimated explicitly the prevalence of CM as a whole or any one form of CM and, based on a random or representative sample of a national or regional general population or a clinical population.
2. The study was an utilisation study on CAM use among random or representative samples of a national population or a regional population, if such a national study was not available, and explicit data on the prevalence of CM as a whole or any one form of CM was available in the CAM study.

Papers were excluded if one of the following criteria applied:

1. The study was an utilisation study on CAM use in a clinical population.
2. The study did not describe the study methods, e.g. a review, an article that did not mention how the data of CM prevalence were collected, or a report describing studies elsewhere.
3. The full publication was not written in English or Chinese.
4. The study was not published in an academic journal or a formal report document.
5. Data addressed forms of herbal medicine other than Chinese herbal medicine.

Again, the references of all relevant papers were examined to identify further literature. Furthermore, the following publications, which are not available in electronic databases or partially admitted to electronic databases, were hand-searched: "*Journal of Complementary Medicine* (Australia, 2002-2006)"; "*Journal of Complementary and Integrative Medicine* (2004-2006); "*Journal of Traditional Chinese Medicine* (1991-2005)"; "*The Journal of Chinese Medicine* (1991-2005)"; "*Chinese Journal of Integrative Medicine* (2003-2005)". A search was also conducted on one of the major Chinese literature databases (CQVIP

Information, a fee-paying database in China[99]) and through Google Scholar, using the key words listed in Table 2.12 to screen for further literature. Using the same data extraction protocol, all identified publications were read in full and searched for substantive information that specifically related to CM.

2.3.4.2 Results

Methodological Quality and Study Design

Twelve Type I articles (i.e. exclusively Chinese medicine studies) met the criteria and were included in the review. Among these, five articles[51,100-103] were based on general populations and another seven[104-110] were based on defined populations. The key data of these 12 articles are summarized in Table 2.13 and Table 2.14.

CM use among the general population was investigated in Taiwan,[51,102] Hong Kong[101,103] and New York City's Chinatown.[100] Except for Chou's 1991 acupuncture study, all other studies investigated CM as a whole.[102] Similar to the data collection method for CAM studies on clinical patients or a defined population, CM results for a defined population were also based on convenience-based participant recruitment (Table 2.14). The sample sizes for all studies were large (median size for 11 studies=1,145). Studies on the general population mainly comprised data collected through a structured interview or telephone interview, while studies on a defined population were predominantly conducted by paper-based questionnaire.

A further 21 Type II literature (i.e. CAM studies with information on CM) met the criteria for this review (Table 2.15). The methodological quality of these studies has been discussed earlier. Individual forms of CM were available in acupuncture, herbal medicine, moxibustion and massage. Data on the use of Qigong and Tai Chi was available only in a US CAM study,[1] while data on Chinese medicine dietary therapy and martial art were not available.

Table 2.13 Chinese medicine use in general populations

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Chan *et al.* (1976)[100]	New York City's Chinatown (n/m)‡	Randomly selected Chinatown residents aged 16+ (87)	Face-to-face interviews using a questionnaire (n/m) ‡	17.2% had seen Chinese medicine (CM) practitioners in the past two years.
Wong *et al.* (1995)[111]	Territory-wide in Hong Kong (HK) (1989-1990)	Randomly selected ethnics Chinese HK residents aged 18+ (2,822)	Telephone interviews (76%)	48.9% had previously consulted an herbalist; 9% consulted herbalist for their most recent illness; 5.8% had previously consulted an acupuncturist.
Chi *et al.* (1997)[51]	Taiwan (1991-1992)	Randomly selected adults in Taiwan (1,358)	A 4-week diary and an interview (52.9%)	9.6% used CM as the major source of medical care; the top three conditions to use CM were diseases of 1) respiratory system, 2) musculoskeletal system and 3) injuries and poisoning.
Chou *et al.* (1998)[102]	Taiwan (1991)	Randomly selected from the voter registration, aged 20+ (5,805)	Structured questionnaires used during home visits (70.1%)	12.4% had previously received acupuncture treatment.
Lau *et al.* (2001)[103]	A district in HK with 0.6 million population (1995)	Randomly selected 1,183 households with 4,339 participants	Face-to-face interviews using a questionnaire (54.2%)	3.3% visited a CM practitioner within 3 months prior to the survey; 13.5% had previously used CM.

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey. ‡ n/m: not mentioned

Table 2.14 Chinese medicine use in defined populations

Author (year)	Place of study (year)	Sample (n)	Data collection method (response rate, %)	General findings*
Wong *et al.* (1997)[104]	A small town in Hong Kong (HK) (1992-93)	People reported suffering from acute illness aged 18+ (847)	Subgroup analysis of a survey with 7,570 subjects: telephone interview (82.8%)	14% had previously consulted Chinese medicine (CM) practitioners when ill.
Cassidy *et al.* (1998)[105]	Six purposively selected clinics in the US (1995)	Patients used general service clinics and Chinese medicine care, aged 11+ (575)	Anonymous self-completed questionnaire (45.9%)	99% had previously used acupuncture; 59.7% received moxibustion and 35.5% used Chinese herbal medicine (CHM); the top three reasons of seeking CM were relief of pain, unstable mood and, maintaining well being.
Wong *et al.* (1998)[106]	Family practices in Vancouver (n/m)‡.	Patients and their family members, all ages (932)	Waiting room questionnaire (n/m) ‡	28% used CHM and 7% used acupuncture in the past year, 46% ever used CHM and 15% had previously used acupuncture.
Lau *et al.* (2000)[107]	12 randomly selected schools in HK (1996)	Secondary school students (3,355)	Structured self-administrated questionnaire (89%)	8.6% had consulted a CM practitioner over a three months period. Injury suffered from falls was the most popular reason for seeking CM practitioner (66.5%).
Hon *et al.* (2004)[108]	A school of pharmacy in HK (2002)	Pharmacy students (91)	Anonymous self-completed questionnaire (100%)	96% had previously tried CM; 38% had used CM at least once in the past year; >40% of CM users had visited a CM practitioner; upper respiratory tract infections were the most common condition for CM use.
Ng *et al.* (2004)[109]	A community in Singapore (1999)	Non-institutionalised elderly aged 65+ (2,010)	Door-to-door residential survey by using a questionnaire (85%)	25.3% used CHM in the past year, among whom 12.1% used CHM only. The use of CHM was strongly associated with arthritis and cancer (odds ratio=2.43 and 2.57).
Wong *et al.* (2005)[110]	A hospital clinic in HK (2004)	Chronic hepatitis B patients aged 18+ (362)	Self-completed questionnaire (93%)	32% had previously used CM and 16% used CM at the time of the study.

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey. ‡ n/m: not mentioned

Table 2.15 Chinese medicine use in general populations (extracted from major CAM utilisation studies)

Author (year) & country	General findings in Chinese medicine
Eisenberg *et al.* (1993), USA[2]	Chinese medicine (CM) use: acupuncture (0.4%), massage (7%), herbal medicine (3%); Visited practitioners: acupuncturist (0.37%); massage therapist (2.9%) herbal therapist (0.3%); The mean number of visits to an acupuncturist per user was 38.4 per year.
Thomas *et al.* (1993), UK[44]	0.5% adult populations used acupuncture.
MacLennan *et al.* (1996), South Australia[9]	CM use: herbal medicines (9.9%), Chinese medicine (1.8%), Ginseng (3.0%); Visited practitioners: acupuncturist (2.0%), herbal therapist (0.4%).
Millar *et al.* (1997), Canada[45]	N/A
Paramore *et al.* (1997), USA[15]	0.4% visited acupuncturists
Astin *et al.* (1998), USA[46]	CM use: acupuncture (1.4%), massage (5.7%), herbal remedies (4.2%).
Eisenberg *et al.* (1998), USA[3]	CM use: acupuncture (1.0%), massage (11.1%), herbal medicine (12.1%); Visited practitioners: acupuncturist (0.9%); massage therapist (6.8%) herbal therapist (1.8%); The mean number of visits to an acupuncturist per user was 3.1 per year.
Landmark Report (1998), USA[41]	CM use: acupuncture (2%), massage (14%), herbal medicine (17%), acupressure (5%).
Druss *et al.* (1999), USA[47]	Visited practitioners: acupuncture (0.6%), massage (2.0%), herbal remedies (1.8%).
Ramsay *et al.* (1999), Canada[6]	CM use: massage (12%), herbal therapies (12%); Lifetime use: acupuncture (12%), massage (23%), herbal therapies (17%).
Ernst *et al.* (2000), UK[17]	CM use: acupuncture/acupressure (2.8%), massage (1.2%), herbal medicine (6.8%).

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.

Table 2.15 Chinese medicine use in general population (extracted from major CAM population studies, continued)

Author (year) & country	General findings in Chinese medicine
Millar *et al.* (2001), Canada[48]	N/A
Thomas *et al.* (2001), UK[5]	1.6% visited acupuncturists, 19.8% purchased over-the-counter herbal remedy; Over 3 million visits were made to acupuncture providers in 1998; The estimated annual out-of-pocket expenditure on acupuncture was 47 million pounds.
MacLennan *et al.* (2002), South Australia[10]	CM use: herbal medicine (13.4%), Chinese medicine (3.2%), Ginseng (5.0%); Visited practitioners: acupuncturist (2.8%), herbal therapist (0.9%).
Menniti-Ippolito *et al.* (2002), Italy[43]	4.8% used herbal medicine, 2.9% used acupuncture during 1997-1999.
Ni *et al.* (2002), USA[4]	CM use: acupuncture (1.4%), massage (6.4%), herbal medicine (9.6%).
Yamashita *et al.* (2002), Japan[7]	CM use: acupuncture and moxibustion (6.7%), massage and acupressure (14.8%); herbs and over-the-counter Kampo (17.2%).
Barnes *et al.* (2004), USA[1]	CM use: acupuncture (1.1%), Tai Chi (1.3%), Qigong (0.3%), Ginseng (24.1%).
Thomas *et al.* (2004), UK[16]	Visited practitioners: acupuncturist (1.6%), herbal therapist (0.8%), massage therapist (2.1%); traditional Chinese medicine (0.4%).
Nielsen *et al.* (2005), Denmark[42]	N/A
MacLennan *et .al.* (2006), South Australia[112]	CM use: herbal medicine (20.6%), Chinese medicine (2.3%), Ginseng (5.0%); Visited practitioners: acupuncturist (2.1%), herbal therapist (1.9%).

* Unless otherwise defined, use, practitioner visit and expenditure were in the 12-month period preceding the survey.

Prevalence of Chinese Medicine Use in General Populations of Countries and Regions

CM prevalence was first described in a 1976 study in New York City's Chinatown.[100] It found that 17.2% of the population had seen CM practitioners in the previous two years. However, the sample size was rather small (87 participants) and the survey did not differentiate between visits for acupuncture, massage or other services. Studies in Hong Kong (HK)[101,103] and Taiwan[51] were based on data over 10-15 years ago, the representation of the current status of CM use is not clear.

The highest prevalence (48.9% had previously consulted an herbalist) was reported in a Hong Kong territory-wide survey conducted by Wong *et al*. in 1990.[101] In contrast, a low prevalence of previous use of CM (13.5%) was reported in another Hong Kong survey in 1995,[103] based on randomly selected household residents. Study subjects for the latter survey were selected in the Kwun Tong district of Hong Kong, and females in the households were chosen to answer questions on behalf of all family members. Thus, this 1995 survey included utilisation data from all age ranges and may influence the overall prevalence.

A study in Taiwan employed an unusual data collection method.[51] Based on a four-week diary and a retrospective interview, the researcher found that nearly one in 10 people used CM as their major form of medical care. Moreover, a large-scale study on acupuncture conducted at the same time also found just over one tenth (12.4%) of the Taiwanese population had ever received acupuncture treatment.[102]

Prevalence of Chinese Medicine Use in Defined Populations

Seven studies on CM use by patients, students or other defined populations were found (Table 2.14). These studies were conducted in the US,[105] Canada,[106] Singapore[109] and Hong Kong.[104,107,108,110] Similar to the findings on CM use by the general population, CM prevalence in defined populations varied markedly.

The first in-depth, large-scale survey of Chinese medicine use in the US[105] found that 99% of the survey participants had previously received acupuncture. The use of Chinese herbal medicine and moxibusion by the study's participants was also substantial. However, the study was conducted in six selected clinics, including Chinese medicine clinics. It is highly likely that study participants attended these clinics for the purpose of a specialised Chinese medicine service. Thus, the results of this study on CM use have highly to be much higher than its actual use by the general population (Table 2.14).

A Canadian study by Wong *et al.*[106] recruited patients who had visited medical practitioners without Chinese medicine expertise. The prevalence of 28% of patients and their family members who had used Chinese herbal medicine in the past year was similar to a Singapore study[109] (25.3%) on elderly people aged 65 or older.

The use of CM in Hong Kong, a specially administrated region of China, had been considered more popular than in most, if not all, Western countries. However, this was not clearly confirmed by four Hong Kong studies. [104,107,108,110] A relatively low prevalence was reported for secondary school students (8.6% consulted CM practitioners over a three-month period),[107] for people suffering from acute illness (14% lifetime consulting rate),[104] and for chronic hepatitis B patients (16% at the time of the survey).[110]

Prevalence of Chinese Medicine Use (Extracted from CAM Studies)

Acupuncture and herbal medicine are popular forms of CAM in many countries. Although very few studies have been conducted to collect data exclusively on acupuncture and other forms of CM, promising data are available from well-designed CAM studies. Such relevant data were extracted and are discussed below. With a lack of specific studies on CM use in Western countries, the extracted data are of particular value.

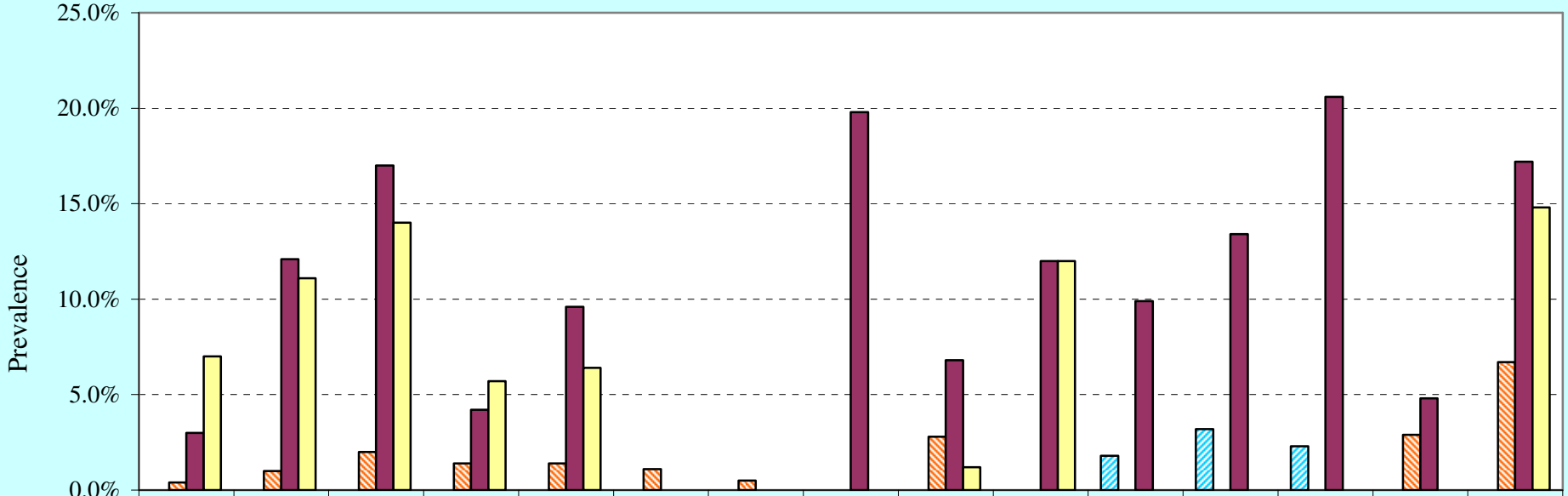
Of 21 identified CAM studies, three did not provide information on Chinese medicine in any form. Information on acupuncture was specifically investigated in the majority of studies, however, limited information is available concerning overall CM prevalence. Moreover, no studies included a classification of Chinese-style massage and herbal medicine. Prevalence data on acupressure and moxibusion have been occasionally reported (Figure 2.5).

Overall CM prevalence was determined in three Australian studies[9-11] and a UK study.[16] In Australia, the prevalence increased markedly from 1993 to 2000, from 1.8% to 3.2%, but then deceased to 2.3% in 2004. The prevalence of visits to CM practitioners was estimated in a UK study. [16] It was estimated that 0.4% of the total population had consulted CM practitioners in a 12-month period but this excluded visits to acupuncturists, herbalists and massage practitioners.

The prevalence of herbal medicine use in the US ranged between 3.0% in 1990[2] and 17% in 1997.[3] Based on four studies between 1997 and 1999, the average prevalence of herbal medicine use was 10.8%.[3,4,41,46] A high prevalence of herbal medicine use was also reported by studies in the UK (19.8%),[5] Australia (20.6%)[11] and Japan (17.2%).[7] Similar to the prevalence of herbal medicine use, approximately one in ten Americans used massage

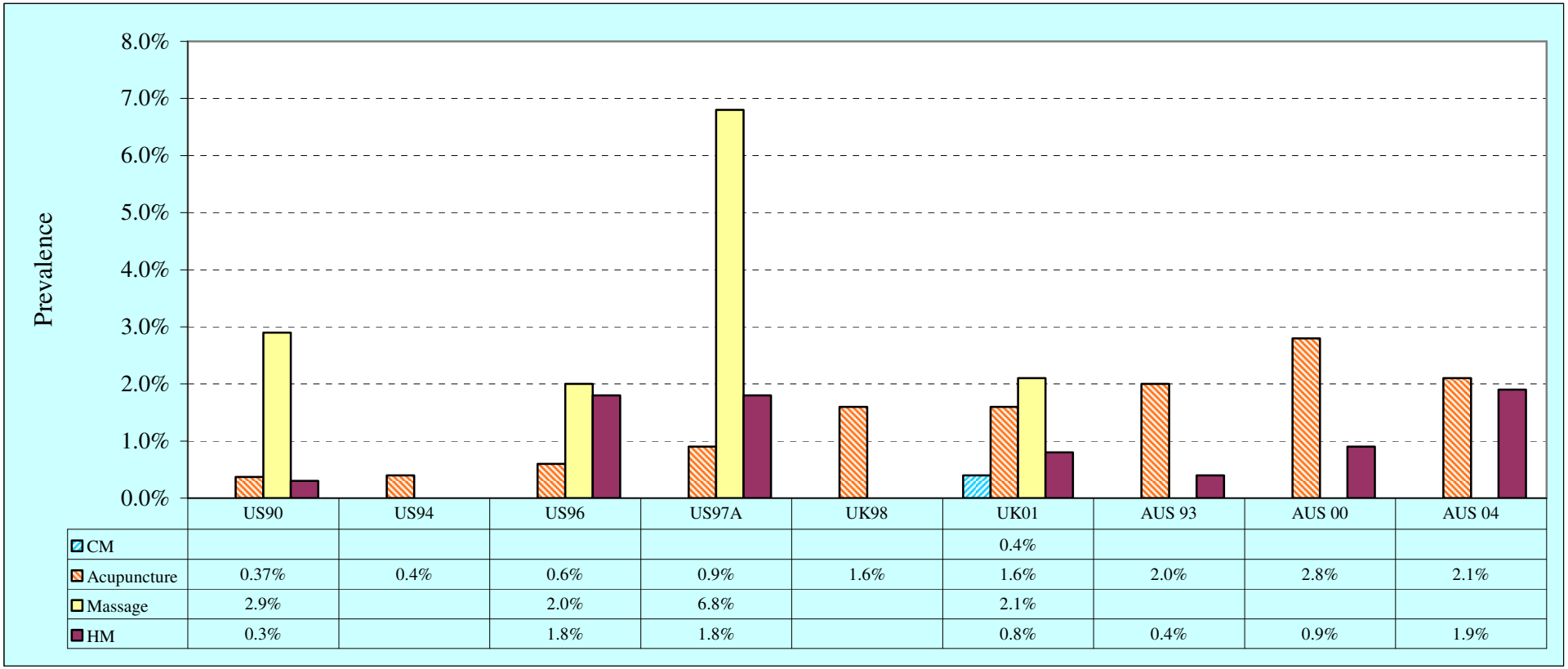
therapy.[3,41] This prevalence was similar to that in Canada and Japan. However, a 1999 UK study suggested that only 1.2% of the population used massage.[17] For acupuncture, except for a higher rate (6.7%) reported in Japan,[7] most studies estimated the prevalence at less than 3%.

In terms of practitioner visits, the prevalence of visits to acupuncturists, massage therapists and herbal medicine practitioners was reported in the US, the UK and Australia (Figure 2.6). Although the use of acupuncture treatment was frequently reported, less than 3% of the populations was estimated to have visited such a practitioner in the previous 12 months, based on the utilisation studies in six countries (Figure 2.6). These studies also estimated that less than 2% had consulted herbal medicine practitioners.



	US90	US97A	US97B	US98	US99	US02	UK93	UK98	UK99	Canada99	AUS 93	AUS 00	AUS 04	Italy99	Japan01
CM											1.8%	3.2%	2.3%		
Acupuncture	0.4%	1.0%	2.0%	1.4%	1.4%	1.1%	0.5%		2.8%					2.9%	6.7%
HM	3.0%	12.1%	17.0%	4.2%	9.6%			19.8%	6.8%	12.0%	9.9%	13.4%	20.6%	4.8%	17.2%
Massage	7.0%	11.1%	14.0%	5.7%	6.4%				1.2%	12.0%					14.8%

Figure 2.5 Prevalence of Chinese medicine use in six countries
CM: Chinese medicine; HM: Herbal medicine
Note: Years were at the time of conducting studies which are different from the dates of publication.
US90, US97A (Eisenberg *et al.*[2,3]); US97B (Landmark report[41]); US98 (Astin[46]); US99 (Ni *et al.*[4]); US02 (Barnes *et al.*[1]);
UK93, UK98 (Thomas *et al.*[5,44]); UK99 (Ernst *et al.*[17]); Canada99 (Millar *et al.*[48]); AUS93, AUS00, AUS04 (MacLennan *et al.*[9-11]);
Italy99 (Menniti *et al.*[43]); Japan01 (Yamashita *et al.*[7]).



	US90	US94	US96	US97A	UK98	UK01	AUS 93	AUS 00	AUS 04
CM						0.4%			
Acupuncture	0.37%	0.4%	0.6%	0.9%	1.6%	1.6%	2.0%	2.8%	2.1%
Massage	2.9%		2.0%	6.8%		2.1%			
HM	0.3%		1.8%	1.8%		0.8%	0.4%	0.9%	1.9%

Figure 2.6 Prevalence of visits to Chinese medicine practitioners in three countries
CM: Chinese medicine; HM: Herbal medicine
Note: Years were at the time of conducting studies which are different from the dates of publication.
US90, US97A (Eisenberg *et al.* [2,3]); US94: (Paramore *et al.*[15]), US96 (Druss *et al.*[47]); UK98, UK01 (Thomas *et al.*[5,16]);
AUS93, AUS00, AUS04 (MacLennan *et al.*[9-11]).

2.3.4.3 Discussion

In the US, Chinese medicine (CM) is an integral part of the growing field of CAM.[28] The results of studies drawn from the past three decades also suggest that CM has been used by a large part of the population of several countries, and that it is one of the most popular forms of alternative treatment to deal with diseases and maintain general health. Based on the current review, the prevalence of CM use may not be conclusive for most countries. In addition, in some countries, at least in China, CM utilisation, including public use and practices, may have been investigated and reported in some other forms, such as government reports.

Although an eligible CM utilisation study has not been identified in Mainland China in the current review, data on Chinese medicine services, including specialised Chinese medicine hospitals and clinics are widely available in China. An examination of data from the State Administration of Traditional Chinese Medicine, P. R. China (SATCM)[113] suggested that, in 2004, there were 3,716 Chinese medicine hospitals in China, including hospitals where CM was integrated with Western medicine (WM) and hospitals of national minority medicine. The SATCM also estimated that, in 2003, in China, nationwide, there were more than 171,419 CM physicians and 30,934 assistant CM physicians.[113] As such, if rigorous utilisation study was designed to estimate the total prevalence of CM in China, substantial proportion of CM usage is highly to be estimated.

When conducting the literature search for CM, a considerable number of studies on general herbal medicine, rather than specific Chinese herbal medicine, were also identified. However, herbal medicine/products presented in such studies were mainly Western-type medicines (e.g. St. John's Wort, evening primrose and Echinacea). Detailed analyses of the extremely broad range of herbal medicine modalities are considered beyond the scope of the current thesis.

2.4 Summary of the Literature Review

These three systematic reviews considered to provide a comprehensive overview of current CAM utilisation in general populations around the world. CAM use in different regional and clinical populations in Australia, as well as the use of all forms of Chinese medicine around the world, have been systematically summarised. Due to the heterogeneity of the studies included, data from these reviews should be interpreted with caution, despite the fact that the reviews have been completed adhering to rigorous methodology. Nevertheless, the researcher performed these tasks through an objective protocol: an explicit statement of the literature search strategy (see Table 2.3), a detailed inclusion and exclusion criteria (see Chapter 2.3.2.1) and critically, a standardised, predefined data extraction form (see Table 2.4).

As expressed in Chapters 2.1 and 2.2, it appeared that there was little capacity to compare international literature in CAM utilisation surveys due to the substantive differences in its definition and the totality of CAM modalities. As might be expected, similar obstacles were encountered in the current review, particularly with respect to the systemic comparison between countries/regions. Nevertheless, the important function of these reviews was to summarise the existing literature to assist the design of a population-based CAM survey in Australia. The methodological issues identified were discussed in details (see Chapter 8.2).

Although there are considerable uncertainties about the true prevalence of overall CAM and CM use, the prevalence of most forms of CAM (e.g. herbal medicine) in many countries was found to be increasing markedly. On the basis of the data outlined for Australia, it is apparent that overall CAM prevalence is generally higher than in most other Western countries. Specifically, the highest prevalence of a single form of CAM (aromatherapy) was found in Australia amongst the majority (if not all) Western countries.[10,11] This therapy, surprisingly,

was not included in previous US national health interviews,[1,4] nor has it been reported as part of overall CAM prevalence in the US.[2,3]

In 2005, the Kobe Centre for Health Development of the World Health Organisation (WHO) published a comprehensive global atlas of CAM use.[114] It was designed to record details of policy, regulation, education, research practices and use of CAM around the world. CAM use in six WHO regional areas was outlined.

In the WHO African region, it has been suggested that CAM, also known as African Traditional Medicine (ATRM) is still the only form of health care in some communities.[115] In addition, it has been estimated that more than 80% of Africans used ATRM, whereas only about 50% of the African population had regular access to essential pharmaceuticals.[116]

In the WHO region of the Americas, a review was conducted across 35 member states/countries. Apart from the US and Canada (see Table 2.4), a CAM survey was only available for the Argentine Republic.[117] It revealed that more than half (54.4%) of the population of Argentina used CAM, among which homeopathy (40%), herbal medicine (36.7%), chiropractic (21.4%), acupuncture (12.9%) and bath flowers (11.6%) were most popular.

No consolidated data are available on utilisation and practices of CAM in South-East Asian region and the Eastern Mediterranean region, despite the belief that various modalities of CAM are being used in this region.[118,119] Other than some general data on the use of Ayurveda and Unani in India, Bangladesh and Nepal; Thai therapy in Thailand; and Jamu in Indonesia, other forms of CAM have rarely been investigated.

There is a wide range of CAM within the European region, particularly in Western European countries, such as Germany, Denmark and the UK. More importantly, nearly all countries in this region have some form of government subsidisation of CAM.[120] Population surveys are available in the UK and Denmark to show that the trend of CAM use by the general public is increasing over time (see Table 2.4).

Perhaps, more comprehensive results are available in the Western Pacific region.[121] Traditional Chinese medicine (including acupuncture, herbal medicines and massage therapy) is officially recognised in a number of countries, for example, China, Japan, Singapore and the Philippines. As mentioned in Chapter 2.3.4 (a systematic review of the specific prevalence of Chinese medicine), information available for these countries is mainly on the profile of CAM services and practices, other than the use by the general population. A profile of CAM usage in Australia was not included in the WHO report.

In summary, as discussed in most published CAM surveys, rigorous survey research is required to exclude the drawbacks of all aspects of CAM research, in particular the classification and definition. In addition, future research should focus on the use of listed, commonly used forms of CAM over a defined period, preferably the previous year. Other critical matters related to CAM use, are why people use CAM, and what are the perceived and actual benefits and risks of using CAM. Presented below is the methodology and results of a recently completed CAM national study in Australia, in which considerable efforts were made to answer the research questions and objectives according to rigorous standards.

CHAPTER 3. METHODOLOGY

3.1 Foreword

In general, a clear CAM definition, a reliable survey instrument, as well as rigorous sampling and data collection methods are vital in designing a reliable CAM survey. Based on the existing literature, with specific consideration to the Australian health-care context, the identified methodological concerns in conducting a national population CAM study in Australia are discussed below.

Extensive consultations were conducted with experienced CAM researchers, CAM academics and population health researchers to assist in the survey design. These consultations were extremely helpful in confirming the issues faced by researchers conducting CAM surveys. Data collected through computer-assisted telephone interviews (CATI) with randomly selected individuals using random-digit dialling (RDD) seem to be the most appropriate methods in the Australian context. Seventeen (17) forms of CAM were included in the survey on the basis of a review of existing literature on CAM utilisation, in Australia and overseas. Since a comprehensive list of CAM modalities used by the Australian population is not readily available, a pilot study was conducted. The initial draft of the survey instrument was developed from similar considerations.

The detailed sampling methods, the process of developing an appropriate survey instrument, the data collection protocol, the quality assurance process and the data analyses approaches are presented in this chapter.

3.2 Sampling Methods

3.2.1 Sample Size

In general, the sample size required to represent a population depends on the size of the population, the desired level of statistical significance and the acceptable level of margin of error. The Australian adult population at the time of conducting this study was approximately 15.3 million.[122] CAM prevalence estimation in South Australia in 2000 was 52.1%[10] (confirmed in 2004 with 52.2%[11]). With 95 percent confidence intervals of plus/minus 3%, it was determined that 1,067 interviews would be appropriate for the proposed study (Figure 3.1,calculated by Epi Info 6.0 package, Centers for Disease Control and Prevention, USA).[123]

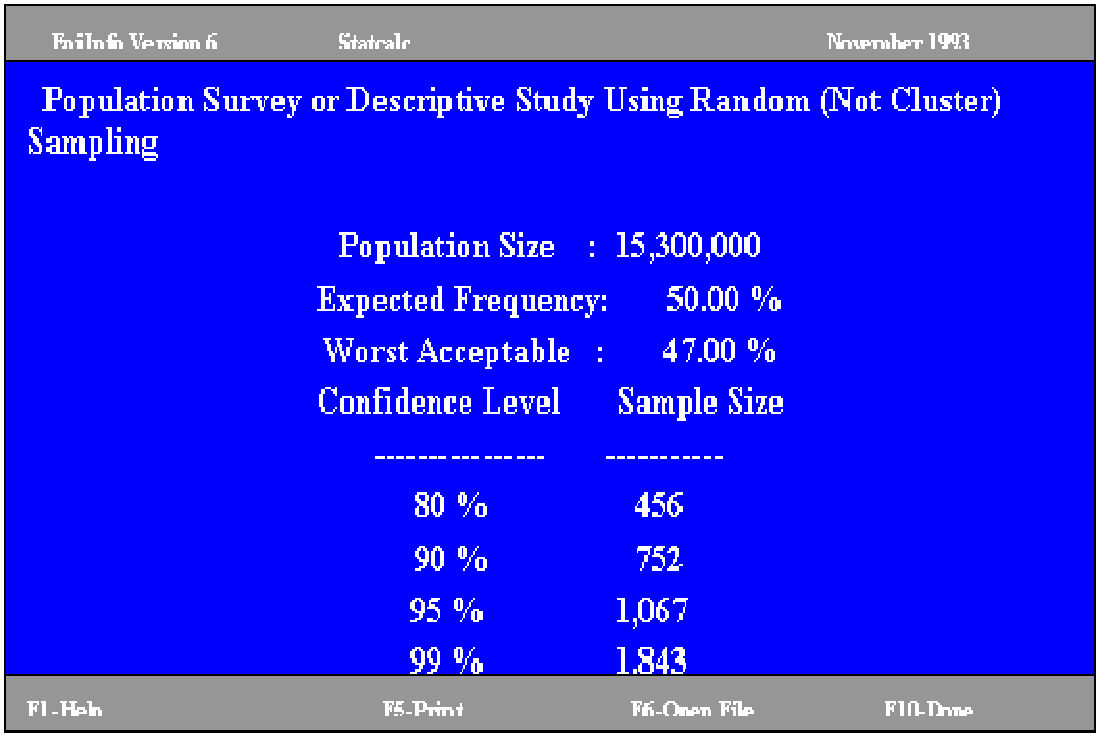


Figure 3.1 Sample size calculation using Epi Info 6.0 software package

The appropriate sample size can also be calculated through the modification of a common statistical formula:

Because an estimated margin of error can be calculated as: e = $z\sqrt{\frac{p(1-p)}{n}}$

The estimated number of interviews: n= $\frac{z^2 p(1-p)}{e^2} = \frac{1.96^2 * 0.5 * (1-0.5)}{0.03^2}$ =1,067

Where p = Value used to represent the population proportion (prevalence of outcome measurement, when p=0.5 it maximises the required sample size)

e = Desired margin of error

z = Critical value from the standard normal distribution table

n = Target population

This calculation is based on the assumption that random samples will be drawn from an extremely large general population. In the current case, samples will be drawn from 15.3 million adult Australians, which can be considered as infinitely large in statistical terms.

3.2.2 Sample Selection

Target Population

The participants of the study were adults aged 18 years or older who were randomly selected from all states and territories around Australia. As all interviews were conducted in English only, only participants who were fluent in English were recruited. In addition, household members who had physical or mental handicaps, and those had not given oral consent to interviewers were excluded.

Stratified Household Sampling Frames

This study was conducted concurrently in six states and two territories: New South Wales, Victoria, Queensland, South Australia, West Australia, Tasmania, Australian Capital Territory and Northern Territory. Sample distributions were allocated at state level (Table 3.1). The populations of Tasmania, Northern Territory and the Australian Capital Territory are rather small. Thus, although representative proportions of interviews were achieved for all states/territories, it was decided that state-level comparisons would only be done for New South Wales, Victoria, Queensland, South Australia and Western Australia.

Table 3.1 Allocation of study samples in accordance with state and territory populations

State/Territory	ABS (%)	Targeted sample size (n)
New South Wales	33.5	358
Victoria	24.9	266
Queensland	19.1	204
South Australia	7.8	83
Western Australia	9.8	104
Tasmania	2.4	25
Northern Territory	0.9	10
Australian Capital Territory	1.6	17

Quota Set with the Interviews

In an effort to achieve a representative sample through the random dialling process, using the 2004 ABS population data percentages on age and gender,[124] interviews for each gender and each age range were then allocated (i.e. 18-24, 25-34, 35-44, 45-54, 55-64 and 65+) (Table 3.2). The percentages of interviews in the various age groups for each gender in the current samples matched the Australian population data. Participants were accepted in each defined category until the quotas were full. These protocols were to ensure the random digit dialling process (see below) and stratified sampling frames were practical. However, the use of quotas limited the randomised selection process, and the need to overcome this possible limitation will be discussed in this chapter.

Table 3.2 Gender and age quotas set in the study

	Male		Female	
Age range	**ABS (%)**	**Quota set in the study**	**ABS (%)**	**Quota set in the study**
18-24	6.57%	60-70	6.29%	60-70
25-34	9.39%	90-100	9.40%	90-100
35-44	9.75%	100-110	9.85%	100-110
45-54	8.94%	90-100	9.04%	90-100
55-64	6.94%	70-80	6.82%	70-80
65+	7.61%	75-85	9.40%	95-105

Selection of Participants within Households

The methodology used to select participants within households was the "next birthday" technique to minimise volunteer bias. Only one participant was selected from each household. Once identified, the participant would not be substituted with another member of the household.

3.3 Development of Survey Instrument

A definite CAM definition is not possible, yet CAM usually refers to therapies/products that purport to offer diagnostic and therapeutic alternatives or to complement conventional medicine. Due to the complexity of CAM modalities, it was decided to include a list of therapies based on the previously discussed systematic reviews of the literature (Chapter 2), which were commonly being used in Australia.

To address the issue of a potential overlap of CAM modalities, and to provide an appropriate classification of CAM, with consideration of the Australian health-care context and previous CAM utilisation studies nationally and internationally,[1-5,9-11] 17 forms of CAM were included in the main survey (Table 3.3) (Appendix A). In addition, based on a previous study from our research group,[62] it was decided to include the specific forms of Chinese medicine: Chinese herbal medicine, acupuncture, Chinese therapeutic massage, Chinese dietary therapy, Qigong, martial art and Tai Chi. This was done to ensure that all major forms of Chinese medicine were covered by the survey, and to produce explicit utilisation information on Chinese medicine as a whole within a general CAM study. This will allow comparison with previous Australian regional studies,[10,11] which collected CAM prevalence by using different terms of individual CAM modalities, for example, "Chinese medicine" and "herbal medicine" were researched independently.

In addition to the 17 selected forms of CAM, the contracted professional survey company suggested that a list of "other CAM" should be included in the survey. This was to assist the interviewers when a participant indicated that they had used CAM other than, or in addition to any of the 17 selected forms of CAM. The list of "other CAM" modalities was available to interviewers through an auto-dropdown list on the computer interview screen (Table 3.4).

Table 3.3 NCCAM classifications of the 17 selected forms of CAM in the survey

NCCAM Classifications*	17 CAM therapies
Alternative medical systems	1. Acupuncture 2. Homeopathy 3. Naturopathy
Mind-body interventions	4. Meditation 5. Yoga
Biologically based therapies	6. Aromatherapy 7. Chinese herbal medicine 8. Chinese medicine dietary therapy 9. Clinical nutrition (e.g. multivitamins and minerals) 10. Western herbal medicine
Manipulative and body-based methods	11. Chinese therapeutic massage 12. Chiropractic 13. Osteopathy 14. Reflexology 15. Western therapeutic massage
Energy therapies	16. Energy healing (e.g. reiki and therapeutic touch) 17. Qigong, martial art and Tai Chi

* NCCAM: National Center for Complementary and Alternative medicine (US)

Table 3.4 List of "other forms of CAM" included in the survey

Alexander technique
Art/music/dance therapy
Ayurveda
Bowen technique
Hypnotherapy
Iridology
Kinesiology
Magnetic field therapy
Myotherapy
Prayer
Other forms of relaxation techniques (eg. Pilates)
Shiatsu
Other--specify

A questionnaire was developed to answer the research questions which were designed to be completed in an average of 15 minutes. The questionnaire was divided into six sections (Table 3.5) and contained some 60 questions: 40 yes/no questions, 15 multiple-choice questions and five open-ended questions. In addition, groups of questions on four specific forms of CAM: acupuncture, CHM, chiropractic and osteopathy were developed by relevant experts in these fields, with particular emphasis on the benefits and risks, insurance coverage and regulation matters. These questions were later re-formatted in a coherent manner.

Table 3.5 Structure of the computer-assisted telephone interview questionnaire

- Section 1: General health and the use of conventional medical services
- Section 2: Prevalence and frequency of use, and expenditure on CAM
- Section 3: Rationales for CAM use and attitudes toward CAM regulation
- Section 4: CAM and private health insurance reimbursement and Medicare coverage
- Section 5: Questions on four CAM therapies that are regulated at national or state level
- Section 6: Socio-demographic information on participants

A total of eight revisions were made to the instrument between December 2004 and April 2005. The instrument was then programmed for use in a CATI telephone interviewing system. A sample of the final version of the questionnaire and a sample of the CATI programming script are attached (Appendix B C). Finalisation of the instrument was achieved after conducting the pilot study.

Participants were first asked about their use of the 17 CAM therapies and any other forms of CAM over the 12 months preceding the survey. Thus were asked whether or not they had visited a practitioner for any of the 17 forms of CAM. Participants were not required to answer all questions. Depending on each participant's historical CAM use, specific questions were customised by the CATI system. In an attempt to enhance the validity, the sequence of the 17 forms of CAM therapies was offered randomly for each interview session.

3.4 Computer-Assisted Telephone Interview

When determining whether to use a mail or telephone survey to collect information, it is important to evaluate the advantages and disadvantages of each method in relation to the research objectives. Mail surveys are frequently used and are relatively inexpensive. However, they tend to have a low response rate and are time-consuming to implement. Mail surveys are suitable for the investigation of sensitive issues, such as illicit drug use, or for surveys requiring participants to fill in complex and lengthy questionnaires. However, unlike telephone surveys, there is less opportunity for mail survey participants to provide explanations of their perceptions, beliefs and attitudes towards the research questions.

Computer-assisted telephone interview (CATI) involves electronic data collection, capture, and associated tasks.[125] It is commonly used in large-scale health surveys, such as the Victorian Population Health Surveys and the New South Wales Health Surveys. In Australia, the percentage of households with fixed telephones is 97.5%,[126] hence the CATI surveys methodology is feasible. The advantage of using CATI for a survey such as the one proposed, is that it is relatively cost effective, providing standardised prompts, thereby ensuring data consistency. It also offers direct data input and data output.[127,128] For the reasons outlined above, it was decided that the study would employ the CATI method of data collection.

A CATI facility is currently not available at RMIT University, and the cost of setting up a CATI centre is substantial. State health authorities in Australia conduct CATI surveys, either through their own call rooms or by contracting with commercial providers. Thus, a survey research company was contracted to conduct the telephone interviews. The use of professional trained telephone interviewers also ensured that reliable data would be obtained. A similar approach has been used by other researchers for well cited reports.[2,3]

3.4.1 Random Digit Dialling

Telephone surveys, based on the selection of random telephone numbers, were used in the early 1960s.[129] Most importantly, telephone numbers should be generated by a random digit-dialling (RDD) method. Such a method had been used in previous similar CAM utilisation studies in the US.[2,3] Unlike drawing numbers from the phone book listings, RDD allows for the inclusion of silent, unlisted and recently allocated telephone numbers. Thus, telephone numbers used in the interviews did not come from any specific source but were randomly generated by computer to ensure all household members had an equal probability of being contacted.

In an attempt to minimise company or other business numbers, existing residential-prefix telephone numbers was used. For the current study, the first step of the RDD sampling was to select telephone numbers from the current available Telstra (a national telephone company) telephone exchanges. Randomly generated telephone numbers with six-digit prefixes for each study area in different states/territories were produced. Two digit suffixes were then randomly appended at the end of the prefixes (e.g. 9666 55** might become a telephone number between 9666 5501 and 9666 5599).

A total of 20,000 telephone numbers was initially generated; the CATI computer system then screened out calls to facsimile machines, data lines, and unassigned and disconnected numbers, which meant only live calls were assigned to interviewers. Additional random telephone numbers were generated to recruit sufficient participants. A minimum of five call attempts was made to contact the household member. Calling proceeded, and a record of all calls was made, including non-reachable numbers, confirmed call-back numbers and household members who declined to participate.

3.4.2 Interviewer Training

In an effort to produce the precise prevalence of CAM users and non-users, interviewers with experience in health surveys were selected from the survey company to conduct the interviews for the current survey. All interviewers attended a four-hour training and debriefing session in which the fieldwork manager and study investigator went through each interview question. Interviewers were given explanations of survey background information and all listed CAM modalities to be investigated.

In addition, a brief interview memorandum with a short definition of each form of CAM was also provided to all interviewers, and used during interview sessions. Samples of common forms of CAM were highlighted on the computer interview screen, and were provided to the survey participants if requested. Other interviewer instructions included, "Australian common allied health professions such as physiotherapy and occupational therapy are not considered as CAM in this study", "please distinguish between CAM use under the supervision of a practitioner and use without such supervision"; "please confirm it was out-of-pocket expenditure excluding money you [the survey participant] have obtained rebates from any source", "please only provide expenditure and frequency of visits to CAM practitioners in the past 12 months"; "please differentiate the use of Chinese herbal medicine and Western herbal medicine, and Chinese therapeutic massage in compared to other massage therapies (i.e. Western therapeutic massage)".

3.4.3 Quality Control Procedures

For quality control purposes, two interview fieldwork supervisors randomly checked interview conversations simultaneously. The researcher was also on site, and randomly listened to most of the interview sessions. Interviewers had the opportunity to refer any questions from participants to the researchers during the interview sessions. The researchers also had the opportunity to correct or make comments on participants' responses. The detailed survey development process, including the quality assurance strategy, is summarised in the following flowchart (Figure 3.2).

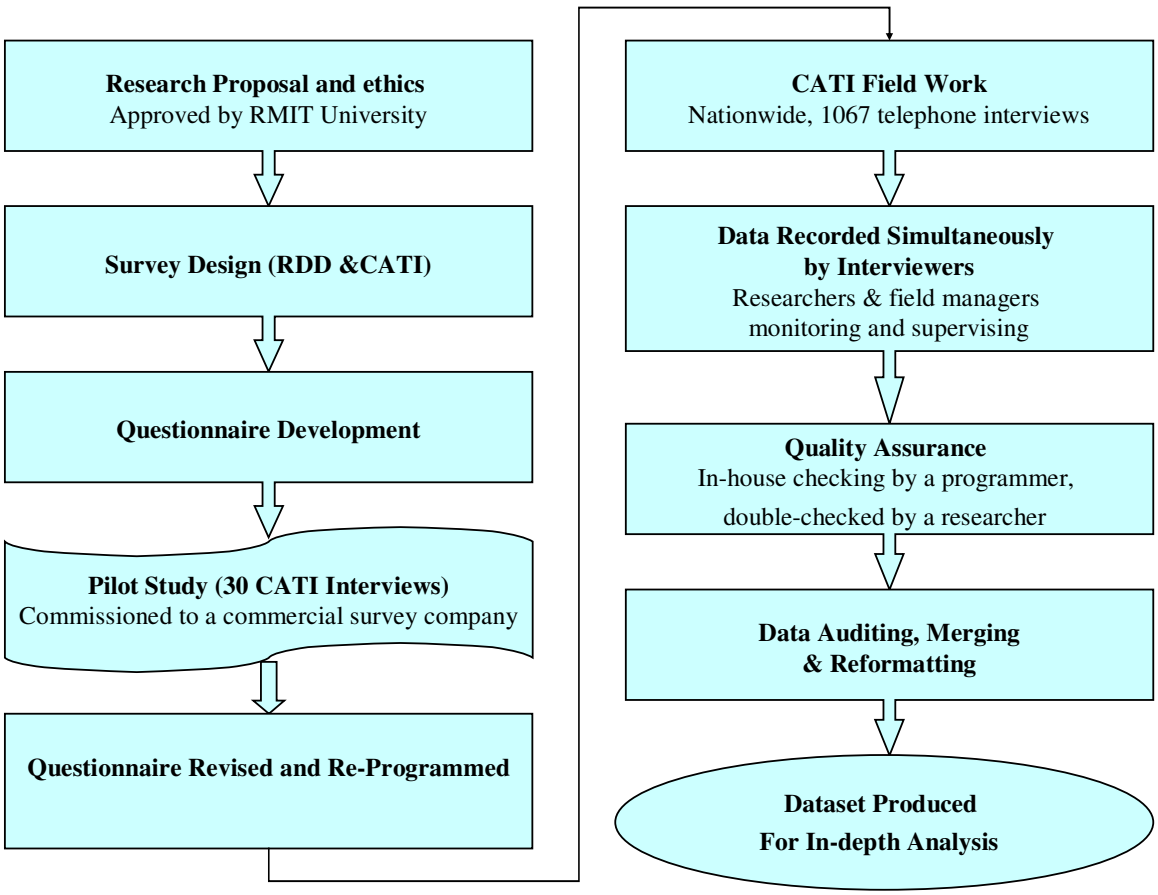


Figure 3.2 Survey development-process and quality-assurance protocols

3.4.4 Interview Procedures

The procedure of conducting the CATI telephone interview is described below. The automated dialling CATI system makes the initial phone calls from the monitoring stations; all working telephones then transfer to the interviewers. The interviewers then initiate the interview procedures, and the computer program controls questions branching or skipping. The interviewers then conduct the tasks of interviewing and entering the data into the computer system simultaneously. Where appropriate, the CATI system will also perform data checking while an interview is in progress. The subjects' responses are then transferred directly into a CATI program linked to a database. These procedures ensured accurate and consistent answers were given by the participants.

The interactive statistical software in the CATI system permits rapid preliminary analysis of the survey data. The final output of the data will be produced in different formats: raw, uncoded preliminary data files, Excel and SPSS data files and partially coded qualitative data files. The project managers in the research company will also audit a minimum of 10% of the interviews.

The process of CATI auto branching is very important to collect reliable information. For instance, if a participant responded that they had never used any form of CAM, the CATI system would skip to the relevant questions instead of asking them specific questions on using CAM. Similarly, if a participant had used a specific form of CAM, the CATI system would continue to ask questions relevant to that type of CAM (e.g. practitioner visits and frequency). As a result of this automatic branching or skipping of questions, interview time was minimised.

Having complied with the ethical requirements, potential participants were given an abbreviated statement in plain language with background information about the survey to obtain their consent to participate (Appendix D). A full, printed version of the statement was provided if a potential participant requested one (Appendix E). Participants were informed prior to participating in the interview that this survey was intended to obtain accurate information about CAM utilisation to determine national prevalence data.

The CATI interviews were conducted in May and June 2005. A maximum of 15 attempts were made to establish contact with an individual. People who normally stay at home during the day may have different characteristics, compared to those normally at work during the day. Thus, the telephone calls were made from nine o'clock in the morning to nine o'clock in the evening, seven days a week, to get a balance of different groups of participants. Appointments were made during the duration of the survey period, and an additional 10 attempts were made to contact each identified individual with an appointment. No financial incentive was provided.

In order to obtain accurate information on CAM prevalence, the following questions were asked: "In the past 12 months, have you used any one of the following types of complementary medicine? Please say yes or no when it is named". If a participant used one specific form of CAM, the following questions were asked: "Have you visited a practitioner for [name of automated CAM appeared in the screen based on previous question] in the past 12 months?" and "how many times in total did you visit a practitioner for [name of CAM] in the past 12 months?" Due to the limitation on the time of interviews, the frequency question was asked only if a participant used one of ten types of CAM (mainly provider-based CAM therapies, see result section Table 4.9). The flowchart below summarises the process of the interview (Figure 3.3).

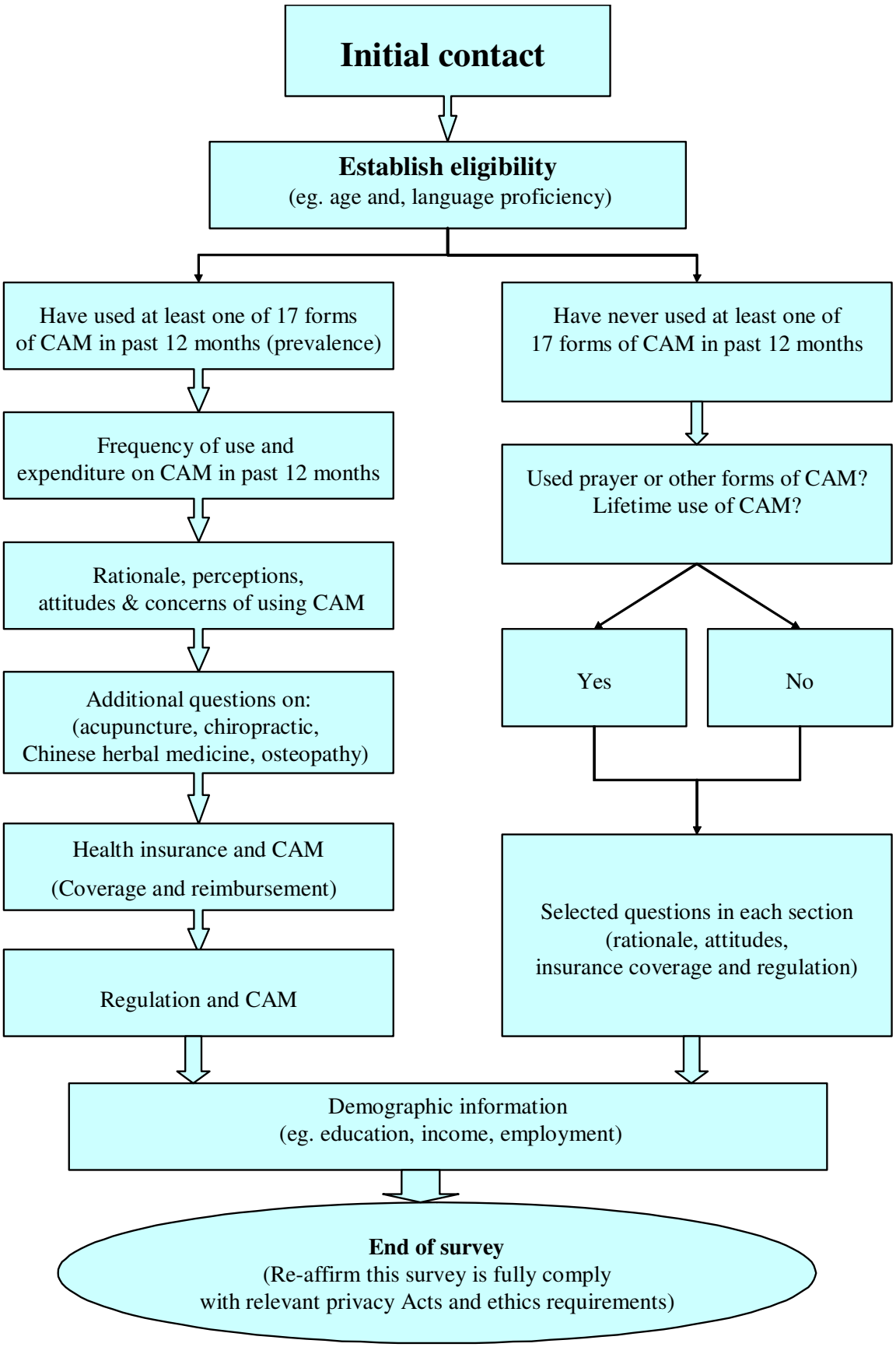


Figure 3.3 Flowchart of computer-assisted telephone interview questions

3.5 Pilot Study

3.5.1 Foreword

Ethics approval (Appendix F) was obtained for the study from RMIT University's Human Research Ethics Committee. A pilot survey with 30 randomly selected individuals in the state of Victoria was conducted in April 2005. The responses from the pilot study helped to clarify the understanding on the 17 CAM therapies to be included in the main study. The pilot study was also used to validate and refine the survey questions, the flow of the interview, and to assess the quality assurance procedures of the research company contracted to conduct the fieldwork. As a result of the pilot study, changes were made to the questionnaire programming, the final version of the questionnaire and the interview schedules. Interview notes were provided to interviewers to clarify some frequently asked questions that arose from the pilot study.

3.5.2 Results of the Pilot Study

Telephone interviews were successfully conducted with 30 randomly selected Victorians. Their age ranges, gender and country of birth are presented in Table 3.6 below, and are compared with the 2001 Victorian population data.

Table 3.6 Basic demographic information on pilot study participants

Characteristic		Results of pilot study %	ABS 2001 Victoria %
Age range	18-24	16.7	12.7
	25-34	20.0	19.8
	35-44	30.0	20.4
	45-54	10.0	18.0
	55-64	13.3	12.2
	65+	10.0	16.9
Gender	Male	33.3	49.1
	Female	66.7	50.9
Birthplace	Australia	80.0	71.1
	Overseas	20.0	28.9

In relation to CAM utilisation, 22 out of 30 (73.3%, unweighted percentage) participants had used at least one of the 17 forms of CAM in the 12 months preceding the survey, while 86.7% participants had visited a medical doctor in the same period. The most popular forms of CAM were: aromatherapy, multivitamins or nutritional supplements, and yoga (each modality, >20%). Other interesting findings include:

1. Fifty-nine percent considered Western medicine has a relatively higher risk of side effects, while 77% considered CAM to be relatively safe.

2. One in four participants who used CAM had never informed their medical doctors.
3. Out-of-pocket expenditure on CAM products was between $0 and $350 per annum.
4. Out-of-pocket expenditure on CAM consultations was between $0 and $1,000 per annum.
5. Additional out-of-pocket expenditure on CAM-related items was between $15 and $1,500 per annum.
6. If a private health insurance offered CAM for no or little additional cost, 60% participants would buy insurance from that company.
7. Medicare should or should not cover visits to practitioners of selected forms of CAM:
    - 80% suggested it should cover visits to an acupuncturist in addition to a registered GP who provided acupuncture treatment.
    - 63.3% suggested it should cover visits to Chinese herbal medicine practitioners
    - 66.7% suggested it should cover visits to chiropractors
    - 70% suggested it should cover visits to osteopaths

Due to the small size of the pilot sample, the above data were collected to assist the design of the main survey only and must not be generalised.

In the pilot study, the researcher randomly listened to some interview sessions, and established that the vast majority of participants were able to follow the sequence of the interview questions. However, participants commented that the interview was lengthy and that some questions were repetitive (specific research questions on four forms of CAM: acupuncture, etc). Importantly, some participants were unsure about some forms of CAM and queried them. A clear explanation was desirable. In addition, two interviewers mentioned that they were unable to inform survey participants what homeopathy and osteopathy were. These matters were resolved before the main survey.

3.5.3 Discussions and Finalisation of the Survey Instrument

Perhaps the most important outcome of the pilot study was that it indicated that over 70% of the participants had used at least one form of complementary medicine in the past 12 months; this provided further confirmation of the adequacy of the target sample size (i.e. 1,067).

All participants were also asked whether they had used any other forms of CAM other than the 17 surveyed. Only three mentioned such use, with none of them saying they had used other CAM but not any of the 17 forms of CAM. Thus, the pilot study also indicated that these 17 forms of CAM therapies are likely to be the most commonly used CAM in Australia. Therefore, the pilot study to test CAM modalities used in Australia was most valuable for finalising the survey instrument.

Other problems encountered during the pilot study included the definition of multivitamins and minerals. This was expected and has been commented by researchers in CAM utilisation studies.[1] However, there is no easy way for the general public to define "non-CAM vitamins" and "CAM vitamins". It was decided, therefore, for the purpose of this survey, the term "clinical nutrition" would include multivitamins and minerals. The term clinical nutrition is more commonly known in Australia. The use of the prefix "multi-" also indicated that the current study was not referring to a single vitamin consumed daily. Interviewers were expected to clarify this with participants while conducting the main survey.

In addition, a few questions were designed to capture the reason(s) why participants used a particular form of complementary medicine. For instance, the original question on chiropractic was: "you mentioned earlier that you have sought chiropractic treatment in the last 12 months. Would you say the main reasons were: [read out by interviewers] 1) To improve general

health and well-being; 2) To improve sporting performance; 3) To improve [the] ability to undertake normal daily activities; 4) For relief of symptoms; 5) None of above–other specify." The question was designed with multiple choices, as participants may have been using chiropractic for multiple purposes. The computer program, however, captured only one answer then skipped to the next question, so interviewers lost the opportunity to gather additional answers. Similar programming problems also occurred with another three questions. Such problems were resolved in consultation with the CATI script programmer before the main survey.

Finally, as would have been anticipated, the recruitment from certain cohorts of participants was difficult. This was particularly observed in young males aged 18-34. This reinforces that the use of a national quota (see Table 3.2) in the main survey is necessary to recruit a nationally representative study population.

3.6 Data Analysis

3.6.1 Data Consolidation and Missing Data

Abandoned interviews (four in total) did not count toward the total of 1,067 successful interviews. Information on them is not available, even though the interviews were partially completed, as the temporary records were deleted immediately after the interviews had been discarded.

The final dataset produced by the survey company was a SPSS (Statistical Package for Social Sciences[130]) data file. Because of the abovementioned quality assurance protocol, and the fact that the information was recorded by using a computer-assisted telephone interview system, missing data was minimal throughout the data set. The number of missing data in each research question is no more than 5%; thus, according to Korn and Graubard, this is fully acceptable.[131]

There are two types of missing data: the purposively designed non-relevant items and items to which participants did not respond. Non-relevant items are those that were not relevant to a particular participant; for example, a question about expenditure on CAM was not put to a non-CAM user. A negative value "-1" was assigned to these responses. Such results do not have any impact on the data analyses. While the "real" missing data (e.g. a CAM user who did not state CAM expenditure for no given reason), was assigned an extreme value of "99999" and was clearly defined in the data property in the SPSS file.

The task of identifying missing data and distinguishing it from non-relevant data was carried out in two steps. Firstly, all data were exported to a Microsoft ACCESS database, using

purposively designed queries, those participants who stated "don't know" or "refused to answer" were identified. These mainly occurred in questions about CAM expenditure, number of visits to CAM practitioners, participants' age, income and personal demographic information. In the second step, a new function available from the SPSS software 14.0[132] was employed. The "data validation" function was particularly useful in customising a particular rule to check whether an individual value was within a valid range and to check the minimum and maximum data values in each data cell. It also flagged the identification of invalid cases for further investigation. A number of outliers of particular values had been flagged in this step for future notice. The overall cases of missing data in any variable are small. Thus, a missing value analysis was not conducted.

The original dataset consists of 236 variables (Appendix G1). However, qualitative data (e.g. medical conditions for which a form of CAM was used) and "other-specify" questions (e.g. other forms of CAM and country of birth) were recorded in a separate Excel file. Such data were merged with the original dataset. More importantly, before any analysis could be carried out, a series of variables was created. These included "CAM user", "those who visited CAM practitioners", "acupuncture user", "chiropractic user" etc. Questions with multiple responses were defined as a separate set of data in order to produce multiple-response frequency tables. Finally, most demographic data were recoded in accordance with relevant classifications used in government reports.

3.6.2 Reliability and Validity of Survey Instrument

Although questions contained in the current survey had been tested by a group of researchers and re-tested in a pilot study, it should be noted that the newly developed instrument has not been widely tested and its reliability has not been formally and statistically evaluated. Also, little information is known about its validity.

The relationship between reliability and validity requires further consideration. Outcome data can be valid but not reliable. Also, a measure can be reliable but invalid.[133-135] Very often, the reliability, which measures the consistency of obtaining data from a scale, can be measured by examining how people answer each item of a set of questions. Mathematically, Cronbach's alpha (α) value can be calculated for each section of the questionnaire with a value that ranges from 0 to 1. In general, an alpha coefficient of 0.70 or higher is considered acceptable for most instrumental design purpose.[136] Unfortunately, for validity, a conclusive method of assessment is not readily available. Most social science analyses rely on a scale that produces results that are expected on the basis of well-established theories. [136] Most often face validity is ascertained via experts within the particular area that is researched.

Therefore, scale reliability analyses (through SPSS) were carried out for different sections within the instrument to assess internal consistency of items measured by the scale. This is to ensure that answers from participants will not differ because the survey is confusing or has multiple interpretations.

In the current survey, prevalence questions and attitudes towards a series of pre-defined questions on CAM-related matters are of major concern from a reliability perspective. The key

results of the reliability test on the 17 CAM prevalence questions confirm that the scale is reliable. The Cronbach's alpha value is calculated as 0.759, which suggests that the scale is reliable (i.e. a value higher than 0.7).[137] More specifically, Table 3.7 shows the item-total correlation of these 17 questions. It indicates that when removing any of the items, the Cronbach's alpha value would not increase markedly, from the calculated reliability of the entire scale, 0.759. Therefore, the reliability coefficient for all items may be considered appropriate. In addition, Table 3.8 shows the inter-item correlation for the 17 CAM prevalence questions; the average correlation value is 0.163 (standard deviation (SD)=0.08) with a maximum of 0.404. It reveals that responses to these questions are not highly correlated. In addition, the item-total correlations of these questions range between 0.199 to 0.456 (Mean=0.354, SD=0.07). According to Briggs and Cheek,[137] this falls within the optimal range for the inter-item correlation (0.2-0.4).

Similarly, when examining the questions on whether or not participants visited a CAM practitioner, Cronbach's alpha value of 0.760 and an average inter-item correlation of 0.171 (SD=0.09) were obtained. Moreover, considerably high Cronbach's alpha values were also achieved for the items on attitudes towards CAM and Western medicine (α=0.954); the reasons for informing medical practitioners about CAM use (α=0.893); the reasons for not informing medical practitioners about CAM use (α=0.970); the reasons for using acupuncture, Chinese herbal medicine, chiropractic or osteopathy (α=0.924); the recommendations received for using these four therapies (α=0.908); and questions on regulations and private health insurance related to CAM use (α=0.763).

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1 Use ACU	2.07	5.422	.340	.748
2 Use CHM	2.09	5.415	.406	.744
3 Use CTM	2.11	5.554	.349	.748
4 Use CMDT	2.14	5.724	.290	.753
5 Use QG MA TC	2.10	5.612	.269	.753
6 Use WHM	1.99	5.150	.398	.742
7 Use WTM	1.89	4.876	.456	.737
8 Use Chiropractic	2.00	5.488	.199	.762
9 Use Osteopathy	2.12	5.678	.244	.755
10 Use Homeopathy	2.10	5.437	.417	.743
11 Use Naturopathy	2.06	5.266	.428	.740
12 Use Meditation	1.99	5.131	.400	.742
13 Use Aromatherapy	2.00	5.138	.417	.740
14 Use Clinical Nutrition	1.71	5.033	.309	.757
15 Use Energy Healing	2.09	5.434	.393	.745
16 Use Reflexology	2.12	5.609	.338	.750
17 Use Yoga	2.04	5.311	.370	.745

Table 3.7 Item-total correlation matrix of the prevalence questions on 17 forms of CAM

Inter-Item Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Use ACU	1.000																
2 Use CHM	.318	1.00															
3 Use CTM	.355	.324	1.000														
4 Use CMDT	.207	.385	.303	1.000													
5 Use QG MA TC	.067	.143	.153	.107	1.00												
6 Use WHM	.160	.239	.139	.159	.074	1.00											
7 Use WTM	.219	.187	.214	.110	.147	.175	1.000										
8 Use Chiropractic	.175	.052	.043	.022	.047	.080	.232	1.00									
9 Use Osteopathy	.153	.158	.125	.101	.073	.120	.159	.054	1.00								
10 Use Homeopathy	.230	.313	.197	.245	.063	.269	.159	.101	.193	1.00							
11 Use Naturopathy	.115	.218	.162	.132	.103	.324	.215	.147	.177	.404	1.00						
12 Use Meditation	.134	.145	.099	.107	.244	.219	.216	.051	.125	.210	.178	1.00					
13 Use Aromatherapy	.136	.143	.159	.087	.199	.206	.313	.085	.068	.135	.216	.261	1.000				
14 Use Clinical Nutrition	.070	.137	.063	.061	.062	.275	.220	.140	.077	.169	.215	.169	.194	1.00			
15 Use Energy Healing	.147	.176	.196	.137	.252	.155	.248	.083	.092	.181	.174	.290	.323	.068	1.000		
16 Use Reflexology	.123	.230	.222	.170	.124	.116	.248	.083	.084	.174	.153	.158	.211	.098	.304	1.00	
17 Use Yoga	.107	.142	.120	.084	.210	.185	.247	.007	.134	.163	.216	.356	.268	.142	.178	.123	1.00

Table 3.8 Item-item correlation matrix of the prevalence questions on 17 forms of CAM

ACU: Acupuncture, CHM: Chinese herbal medicine, CTM: Chinese therapeutic massage, CMDT: Chinese medicine dietary therapy, QGMATC: Qigong, martial art and Tai Chi, WHM: Western herbal medicine, WTM: Western therapeutic massage.

3.6.3 Data Weighting Procedures

The purpose of the data weighting process was to adjust for representativeness with the national population. The weighting procedure used in this thesis is the most conventional, post-stratified direct weighting method.[138] The quota used in the CATI interview was based on nationwide statistics; a reasonable distribution of the study population was achieved at the end of the recruitment to represent Australia's overall population. However, the final make-up of the study population does not match the national population distribution exactly, particularly on a state/territory level. In addition, at the time of developing the national quota, the available ABS population data were for June 2004, while the study participants were recruited between May and June 2005. A post-stratified weighting process was required.

As a result of the age/gender/region weighting process, a total of 89 weighting values were applied to the original dataset (Table 3.9). The method used to calculate the weighting value is in accordance with the number of interviews in this survey and the proportion of sample required to represent corresponding adult Australians.[138] For instance, a total of 28 interviews were conducted with male participants aged 18-24 in New South Wales; this represented 2.63% of the total 1,067 interviews in the current survey (three participants who did not state their ages were weighted differently, see Table 3.9). Based on the ABS data, there was a population of 330,628 adults in this division, or 2.15% of the total adult Australian population. The actual interview numbers exceeded the total number of people required to represent the overall national population. Thus, the assigned weighting value for people within this division is less than 1.0. This can be calculated as a ratio of approximately 2.15% over approximately 2.63%, which equals 0.81620. The sum of the total weights equals the total number of adult Australians interviewed (1,067).

Table 3.9 Data weighting values applied in the data analyses

Weighting values*						
Regions/age	**18-24**	**25-34**	**35-44**	**45-54**	**45-54**	**65+**
Male						
New South Wales	0.81620	0.83725	0.88032	1.09447	1.40855	0.75336
Victoria	1.44342	1.77789	1.42955	0.83317	0.87099	1.88991
Queensland	1.00671	0.83976	1.04984	0.93082	0.72145	1.17948
South Australia	1.73776	1.39896	0.97004	0.93170	2.01745	3.56656
Western Australia	1.20118	1.40761	0.87729	1.09573	0.94109	0.93408
Tasmania	0.79241	1.92156	0.57844	1.20164	0.49743	0.72875
Northern Territory	0.82503	1.24432	0.60585	0.48744	0.63889	0.35148
ACT	N/A†	0.88589	0.33046	0.77136	0.57426	0.96805
Female						
New South Wales	1.55654	1.07618	0.97995	1.27818	0.92574	1.26370
Victoria	0.83665	1.25713	0.82253	0.85538	0.80423	0.74546
Queensland	1.33450	0.76631	1.57041	0.81622	1.33693	1.27532
South Australia	0.70255	1.66628	0.70077	0.54470	0.68234	0.69950
Western Australia	1.13337	1.06591	1.04641	1.41271	1.20283	1.11831
Tasmania	0.49671	1.00738	1.21232	1.22504	N/A†	2.68163
Northern Territory	N/A†	N/A†	N/A†	N/A†	0.50673	N/A†
ACT	1.29250	0.43840	0.28479	1.65587	N/A†	0.59783

ACT: Australian Capital Territory
*Three participants did not state their age, a weighting value of 1.00000 was applied.
† N/A: Interviews did not conduct in that regional areas, a weighting value was not applicable.

The method used to define the weighting values for each participant was through the SPSS syntax technique (Table 3.10).

Table 3.10 An example of SPSS syntax for data weighting protocol

```
COMPUTE Wgt=0.
IF ((Region=NSW) and (Age=18-24) and (Gender=Male)) Wgt=0.81620.
IF ((Region=VIC) and (Age=18-24) and (Gender=Male)) Wgt=1.44342.
IF ((Region=OLD) and (Age=18-24) and (Gender=Male)) Wgt=1.00671.
IF ((Region=SA) and (Age=18-24) and (Gender=Male)) Wgt=1.73776.
IF ((Region=WA) and (Age=18-24) and (Gender=Male)) Wgt=1.20118.
IF ((Region=TAS) and (Age=18-24) and (Gender=Male)) Wgt=0.79241.
EXECUTE .
```

Alternatively, a weight can also be based on how many Australian each participant represents. On average, each of the 1,067 participants in the current survey represented a total of 14,544.37 adult Australians (based on the ABS June 2005 data,[122] the total number of adult Australians was 15,518,843). More specifically, for the abovementioned 28 male adults aged 18-24 in New South Wales, each participant will represent a total of 11,808.11 persons (the total adult population in that division was 330,628[122]). When applying these weighting factors, the sum of the weights was the total number of adult Australians aged 18 or over at the time of the survey, which was approximately 15.5 million people. However, this method produces large weighting values and is more difficult to manage when performing SPSS data analyses. Consequently, the method mentioned earlier (direct weighing method), with much smaller weighting values, was used in this study.

3.6.4 Statistical Analyses

3.6.4.1 Descriptive Analyses

A general descriptive analysis was initially carried out to examine the distribution of the data in terms of their central tendency and spread, such as mean, median, standard deviation, skewness and kurtosis. A symmetric distribution of a number of variables (e.g. the CAM cost and number of visits to CAM practitioners) is of particular importance before conducting correlations or regressions analyses (see below). When calculating prevalence and other major results, 95% confidence intervals are also calculated and, where appropriate, the exact level of statistical significance and the corresponding numbers are also provided.

Standard errors (SE) for all proportions are calculated as: SE=$\sqrt{p*(1-p)/n}$ where p is the proportion, and n is the total number of participants investigated. Consistent with some ABS reports, relative standard error (RSE) is also calculated with major prevalence. The formula is: RSE (as a percentage) = (Standard error of the percentage/actual estimation)*100. All estimations with a RSE greater than 25% are recommended to be used with caution, while a RSE greater than 50% is considered unreliable, as it does not meet the standard of reliability.

3.6.4.2 Inferential Analyses

The independent t-test, and one-way and two-way ANOVA tests were used to test for differences between groups. These were conducted via the SPSS program. Importantly, for prevalence data, the Z-test was used to determine the significance of differences between two percentages (through the statistical formula below (calculated in Microsoft Excel) and also confirmed in the MINITAB–a specialised statistical software package).

$$Z=\frac{|X_a - X_b|}{\sqrt{S_a^2 - S_b^2}} = \frac{|X_a - X_b|}{\sqrt{X_a(1-X_a)/N_a - X_b(1-X_b)/N_b}}$$

Where X_a and X_b are two percentages being compared

S_a and S_b are the standard errors of those percentages

N_a and N_b are the total number of participants investigated

The critical z value at the 0.05 significance level is ±1.96

Cross-tabulation analysis was used to reveal the frequency and common characteristics of the outcome measurements: CAM users and related variables. Because participants' demographic information is mainly in the form of categorical variables, the results can be displayed in customised multi-way frequency tables. The chi-square-based statistics (phi, Cramér's V, and contingency coefficient) are obtained depending on the nature of the variables (nominal, ordinal or interval). In the result section, the weighted percentages are presented rather than the actual frequencies of cases together with their chi-square value and probability (*p*).

Evidence exists to explain the characteristics that account for the use of CAM and visits to CAM practitioners. These include being female, having a better socio-economic status, holistic personal beliefs and experiences with conventional medicine. Thus, hypotheses on factors that contribute to the use of CAM were tested to confirm whether an association exists. These hypotheses will be discussed in the logistic regression model section.

3.6.4.3 Multivariate Logistic Regression

A regression model is commonly used to assess the relationship between a dependent variable and a set of independent variables (predictors). In the case of the current study, the dependent variables of interest are mainly dichotomous, (e.g. whether or not CAM was used) with more than one explanatory independent variable. According to the principles of correlation and regression, a binary logistic regression is most appropriate.[139] Mathematically, in general, the overall effect of the independent variables (known as predictors in the regression) on the dependent variable (the outcome measure) is expressed by the square of the correlation coefficient (r^2), which can be used to predict the proportion of the variance in the dependent variable which is explained by its relationship with the independent variables.[140]

In the current study, the major dependent variables are "CAM user" and "visited CAM practitioners" which represents the use of any of the 17 forms of CAM and visits to a practitioner for any one of the 17 forms of CAM, respectively. Separate regression analyses incorporating predictor variables were carried out within four specific forms of CAM. Guided by a previous US national study on why people use CAM,[46] a list of the hypothesised predictor variables that used to assess the potential correlation with CAM use are generated (details below). However, the use of the existing classification may eliminate and/or include potential factors, both unintentionally and intentionally. Thus, the maximum number of independent variables was included in the initial model-developing stage. Final regression outputs presented in this dissertation are variables that had been entered via a step-wise method and which contributed significantly to the model.

Although logistic regression does not assume a linear relationship between the dependent and independent variables, and the dependent variables need not be normally distributed, there are

a few assumptions for the data that may restrict the application of logistic regression analysis. As logistic regression is based on the principle of maximum likelihood estimation (MLE), a considerably large sample is required. Peduzzi *et al*. suggested that a minimum of 10 observations per parameter should be included in the model.[141]

As with most statistical procedures, outliers can substantially affect all results. As discussed in the data consolidation process above, a thorough data check was conducted before performing data analysis. In addition, for the purpose of logistic regression, the residuals produced alongside the regression model were inspected to identify outlying cases that may have affected the model.

Moreover, as required for general multiple regression, logistic regression also requires no multicollinearity between variables.[142] In simple terms, this means that high inter-correlations among independent variables will change the estimation of the coefficient and will be a problem. As Pallant suggested, ideally the predictor variables should be strongly related to the dependent variables but not strongly related to each other.[142] In the current study, a collinearity diagnostic was conducted, and variables with the problem of multicollinearity was detected by examining the correlation matrix and tolerance value. For example, a variable with a tolerance value less than 0.1 was not included in the regression model.

A few technical terms that are presented in the SPSS output format should be noted, as they are not exactly the same as conventional regression values. First, as stated in the SPSS Regression Models 12.0 Manual,[143] the Hosmer and Lemeshow Test provides the most reliable test on a model performance (to support the model, the p value should be greater than 0.05). The significance value is in contrast to the significant results in the Omnibus Tests of

Model Coefficients. In the latter case, a *p* value less than 0.05 indicates the final model is better than the original guessing model in Block 0.[142]

For easy interpretation, the original beta coefficients in the logistic regression are in a log format, and have been transformed into an odds ratio by taking the exponential (presented as Exp (B) in the SPSS output). According to Tabachnick and Fidell,[144] the odds ratio is "the increase (or decrease if the odds ratio is less than one) in odds of being in one outcome category when the value of the predictor increases by one unit" while keeping all the other predictors constant. For example, in the current study, this may refer to the odds of a participant with a particular characteristic using CAM a greater or lesser number times than someone who does not have that particular characteristic, all other factors being equal. All analyses in this thesis used SPSS to compute regression statistics, and will be presented in comparison to a reference category for all categorical variables.

A Classification Table is also provided in the SPSS output as an indication of how well the model predicted the correct category (CAM use or visits to CAM practitioner). Values in the table correspond to the conventional statistics of sensitivity (the true positives) and specificity (true negatives) of the model.[143] Thus, the summarised statistics of the classification table (the percentage accurate in classification (PAC) statistics) are presented in the current thesis.

Lastly, regression results presented in the current thesis were based on the original unweighted data. This is on the basis of the recommendation by Winship and Radbill that population weights do not make a difference in the results and therefore are not necessary for the regression model.[145] It is important to note that this method was also employed in a previous CAM utilisation study in South Australia.[9] Thus, comparison of results between the current study and those previous studies can be much more straightforward.

CHAPTER 4. NATIONAL PROFILE OF CAM UTILISATION

4.1 Results

4.1.1 Foreword

The intended number of participants (1,067) completed the survey interview. Ninety percent of the interviews ranged between 7.5 and 22.5 minutes, with an average of 13.5 minutes. When considering the downtime in filling appointments, the total average time taken to complete the whole interview was just over 22 minutes. The minimum interview time was four minutes, and the maximum was 37 minutes.

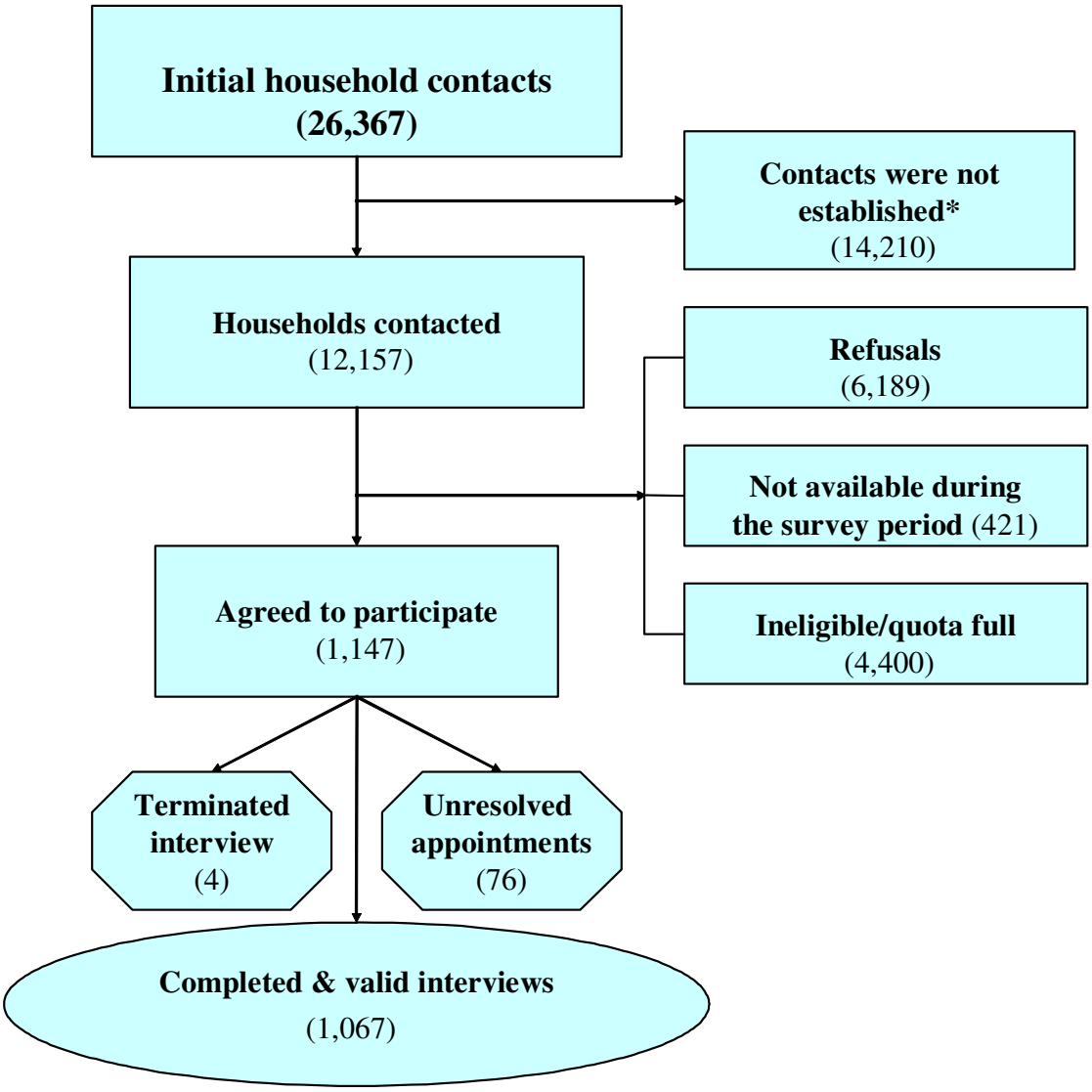
The representativeness of the study population can be evaluated through a comparison with existing independent sources (e.g. the ABS data and recent government surveys), although some data collected from other sources are not readily available for comparison (e.g. some ABS data are only applicable to people aged 15 years and older). Nevertheless, after comparing with a variety of publications (details below), the study population can be considered as a representative sample of the entire Australian adult populations.

Detailed results of national profile of CAM use are presented in this chapter. A regional (state) profile of CAM utilisation is presented in Chapter 5, while Chapter 6 presents specific analyses on some popular forms of CAM in Australia, such as acupuncture, Chinese herbal medicine, chiropractic and osteopathy. Matters related to CAM use, such as rationale for using CAM, insurance coverage and regulation are presented in Chapter 7.

4.1.2 Survey Response Rate

For the main survey 26,367 telephone numbers were generated for dialling. Of these, 28% were not functioning, 10% were not assigned to households or were facsimile/modem numbers, 15% did not answer after a maximum of 18 call attempts. Among the remaining 7,260 participants (the eligibility of most of whom has not been established), 1,067 completed the interview. This corresponds to a 14.7% overall response rate. The response rate was calculated using the formula in the flowchart below (Figure 4.1), which is comparable to the method suggested by the American Association for Public Opinion Research.[146]

Due to the relatively short period of the survey (two months), 320 participants were not available during the study period, and 76 interview appointments remained unsolved at the end of the survey. These figures were not taken into consideration when calculating the response rate. On the other hand, the estimated proportion of cases of unknown eligibility was not reported by the survey company. Thus, an adjusted response rate may be reasonably higher than the current estimation. The majority of people who refused to participate did not provide a reason. Of those who gave a detailed explanation, “don’t have time” and “never do surveys” were the most common responses.



*Telephone numbers not functioning (7,241), fax/internet/data numbers (1,308),
Business and other non-households numbers (1,258),
Phone did not answer, engaged after five attempts or was an answering machining (4,403).

Figure 4.1 Flowchart of the final interview outcome

4.1.3 Characteristics and Representativeness of Survey Participants

Every effort was made to ensure that the survey participants were representative of the Australian national population. National aggregated quotas for gender, age ranges, and state/territory were set on the basis of 2004 ABS data,[124] and the proportions recruited for each of these did not differ significantly from the relevant ABS data for 2005[122] ($p>0.05$) (Table 4.1). The survey sample was also representative of the Australian population in terms of self-reported health status,[147] place of birth (born in Australia or overseas), educational status, employment status and household income range[148] (Table 4.1).

The sample representativeness in this survey was extended when examining the details of participants' country of birth (Table 4.2 shows the top 10 countries of birth of survey participants). It suggested that participants' countries of birth were reasonably distributed across a wide range of different nations similar to the Australian national data,[149] although the population of the state of Tasmania, the Northern Territory and the Australian Capital Territory are relatively small, and the corresponding numbers of interviews were small.

In most cases, participants were asked about their detailed demographic information rather than the combined categories presented in Table 4.1. For example, educational background was categorised as "did not complete high school, completed high school, enrolled at TAFE or university, TAFE or university degree, postgraduate degree" (Table 4.3). These categorical data were merged for easy interpretation, and enhance the statistical power when performing sub-group analyses. In addition to the characteristics presented in Table 4.1, participants were also asked about their status of health insurance coverage. Overall, more than half (55.6%) of the participants were covered by a private health insurance.

Table 4.1 Comparison of socio-demographic characteristics on survey participants and the Australian population

Characteristic*	Survey participants (%**)	Australian population (%)	p value† (chi square)
Gender			
Male	49.0	49.7	0.65 (0.20)
Female	51.0	50.3	
Age range (year)			
18-24	11.9	12.8	0.83 (2.14)
25-34	17.7	18.5	
35-44	20.3	19.4	
45-54	18.8	18.0	
55-64	14.6	14.1	
65+	16.7	17.2	
Region			
New South Wales	33.1	33.4	0.57 (5.74)
Victoria	24.7	24.9	
Queensland	19.3	19.3	
South Australia	8.2	7.7	
Western Australia	9.0	9.8	
Tasmania	2.4	2.4	
Northern Territory	0.8	0.9	
Australian Capital Territory	2.4	1.6	
Self-reported health			
Excellent	18.2	17.7	0.06 (9.16)
Very good	35.2	32.6	
Good	31.2	30.9	
Fair	11.5	13.8	
Poor	3.8	5.0	
Country of birth‡			
Australia	76.2	76.8	n/a
Overseas	23.8	23.2	
Post-secondary education‡			
No	43.8	49.1	n/a
Yes	56.2	50.9	
Employment‡			
Employed	65.7	61.4	n/a
Not in labour force	34.3	38.6	
Annual household income A$‡			
<20,000	17.7	20.0	n/a
20,001-40,000	21.1	24.1	
40,001-60,000	21.5	19.2	
60,001+	39.7	36.7	

* Except for self-reported health, population data are from the ABS 2005 collection. Self-reported health data are from the AIHW Health Report 2004.

** Percentages are of those who provided characteristic information in each category.

† Probability of a difference in the frequency of each categorical variable between the survey and ABS data (chi square).

‡ n/a: Data not directly comparable; survey sample data are for 18 years and older, while corresponding population data are for 15 years and older.

Table 4.2 The top ten countries of birth of survey participants

Country of Birth	2005 CAM Survey		Australian Bureau of Statistics† (%)
	N	%*	
Australia	808	76.2%	76.8%
UK & Ireland	91	8.6%	6.0%
New Zealand	25	2.4%	2.1%
Germany	11	1.0%	0.6%
USA	9	0.8%	0.3%
India	9	0.8%	0.6%
Indonesia	7	0.7%	n/a
South Africa	7	0.7%	0.5%
Netherlands	6	0.6%	0.5%
Poland	5	0.5%	0.3%
Others	82	7.7%	12.4%

* Exclude seven participants who refused to provide information on country of birth

† Source: Australian Year Book 2005 Page 122

Table 4.3 Detailed education and employment background of survey participants

Characteristics	N	%
Post-secondary education*		
<High school	204	19.2%
Completed high school	260	24.5%
Enrolled at TAFE or university	72	6.8%
TAFE or university degree	341	32.2%
Postgraduate	183	17.3%
Employment†		
Full time	435	41.3%
Part time or casual	181	17.2%
Self employed	75	7.1%
Home duties	68	6.5%
Student	36	3.4%
Retired or pensioner	221	21.0%
Unemployed	36	3.4%

* Exclude seven participants who refused to provide information on education

† Exclude 15 participants who refused to provide information on employment

4.1.4 Use of Common Forms of CAM

4.1.4.1 Prevalence of CAM Use

Unless otherwise indicated, the results shown in this chapter were obtained by weighting the sample data to reflect population norms. Table 4.4 shows the prevalence of use of the 17 forms of CAM included in the survey. Over two thirds (68.9%, 95% CI: 66.1% – 71.7%) of participants had used at least one of the 17 CAM therapies in the previous 12 months.

Of the total 17 forms of CAM, the use of clinical nutrition (including multivitamins and minerals) was found to be the most popular (45.8%, 95%CI: 42.8% – 48.8%), while Chinese medicine dietary therapy had the smallest following at 2.3% (95%CI: 1.4% – 3.2%). Low prevalence was also observed in the use of reflexology (4.1%, 95%CI: 2.9% – 5.3%) and of osteopathy (4.6%, 95%CI: 3.3% – 5.9%). In summary, the 10 most popular forms of CAM, in decreasing order, were clinical nutrition (including multivitamins and minerals), Western massage therapy, meditation, Western herbal medicine, aromatherapy, chiropractic, yoga, naturopathy, acupuncture and Chinese herbal medicine. None of the relative standard errors of the prevalence was higher than 25%.

Table 4.4 Prevalence of the 17 investigated forms of CAM

Type of CAM	Prevalence		
	%	95% CI	RSE* (%)
Clinical nutrition	45.8	(42.8 – 48.8)	3.3
Western massage therapy	27.2	(24.5 – 29.9)	5.0
Meditation	17.5	(15.2 – 19.8)	6.6
Western herbal medicine	16.3	(14.1 – 18.5)	6.9
Aromatherapy	16.1	(13.9 – 18.3)	7.0
Chiropractic	16.1	(13.9 – 18.3)	7.0
Yoga	12.0	(10.1 – 13.9)	8.3
Naturopathy	10.7	(8.8 – 12.6)	8.8
Acupuncture	9.2	(7.5 – 10.9)	9.6
Chinese herbal medicine	7.0	(5.5 – 8.5)	11.2
Energy healing	7.0	(5.5 – 8.5)	11.2
Homeopathy	6.0	(4.6 – 7.4)	12.1
Qigong, martial art and Tai Chi	6.0	(4.6 – 7.4)	12.1
Chinese therapeutic massage	5.1	(3.8 – 6.4)	13.2
Osteopathy	4.6	(3.3 – 5.9)	13.9
Reflexology	4.1	(2.9 – 5.3)	14.8
Chinese medicine dietary therapy	2.3	(1.4 – 3.2)	20.0
At least 1 of the above forms of CAM	**68.9**	**(66.1 – 71.7)**	**2.1**

* RSE: relative standard error = (standard error/estimated prevalence)*100

4.1.4.2 Characteristics of CAM Users

A total of 737 participants were classified as CAM users, 45.5% of whom were male, and 54.5% female. Key socio-demographic characteristics of the CAM users are summarised in Table 4.5. A higher proportion of females were CAM users than males, and fewer of those aged 65 and above were users than were younger adults. However, it is worth noting that 60% of those aged 65 and above used CAM (Table 4.5). It appears that CAM users are more likely to have higher levels of education, to have private health insurance, and to be in households with higher than average incomes (Table 4.5). There was little difference in the use of CAM between those born in Australia and those born overseas. In contrast, there was considerable variation in the prevalence of the use of CAM between Australian states (details Chapter 5).

Table 4.6 is the detailed cross-tabulation analysis that reveals the proportions of survey participants who had used each of the 17 forms of CAM, and the participants' specified socio-demographic characteristics. The largest gender differentials were in the use of aromatherapy, Western herbal medicine, Western massage, naturopathy, energy healing and yoga (all modalities with female users being higher than male users, $p<0.001$). In particular, the use of aromatherapy by females (24.0%) was almost three times that by males (8.1%) ($p<0.0001$). Gender differences were also observed in osteopathy and reflexology users, but less significant ($p<0.05$).

As mentioned earlier, the youngest group (18 to 34 years of age) was more likely to use CAM therapies than the older cohorts. However, this may be largely due to the relatively high prevalence of use of yoga, Qigong, martial art, Tai Chi and clinical nutrition by the youngest group (18-34 age group, compared with the 35-64 and 65 and older age groups, $p<0.05$). Not surprisingly, older people also had a low prevalence of use of Chinese herbal medicine,

Table 4.5 Socio-demographic characteristics on CAM users

Characteristics	Were CAM users	
	% (95%CI)	p value†
Gender		
Male	63.4 (59.3 – 67.5)	
Female	74.4 (70.7 – 78.1)	<0.001
Age (year)		
18-34	75.3 (70.7 – 79.9)	
35-64	69.0 (65.1 – 72.9)	<0.05
65+	57.8 (50.7 – 64.9)	<0.001
Country of birth		
Australia	70.2 (67.1 – 73.3)	
Other	65.0 (59.1 – 70.9)	>0.05
Region		
New South Wales	72.1 (67.5 – 76.7)	
Victoria	69.8 (64.3 – 75.3)	>0.05
Queensland	71.0 (64.8 – 77.2)	>0.05
South Australia	60.8 (50.3 – 71.3)	>0.05
Western Australia	66.6 (57.6 – 75.6)	>0.05
Self-reported health status		
Excellent/very good/good	68.4 (65.4 – 71.4)	
Fair/poor	71.7 (64.7 – 78.7)	>0.05
Post-secondary education		
No	61.6 (57.1 – 66.1)	
Yes	74.7 (71.2 – 78.2)	<0.001
Employment		
Employed	72.5 (69.2 – 75.8)	
Unemployed or not in labour force	62.9 (57.9 – 67.9)	<0.005
Private health insurance		
Yes	72.2 (68.6 – 75.8)	
No	64.9 (60.6 – 69.2)	<0.05
Annual household income (A$)		
<20,000	60.1 (52.5 – 67.7)	
$20,000 - 40,000	65.5 (59.0 – 72.0)	>0.05
>40,000	72.8 (69.1 – 76.5)	<0.005

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

aromatherapy, Western herbal medicine, (all modalities, 65 and above age group, compared with 18-34 age group, $p<0.01$), and Chinese therapeutic massage ($p<0.05$). In contrast, the highest proportions of users of osteopathy and reflexology were those over 65 years of age.

When examining participants' country of birth, it is clear that a higher prevalence in the use of Chinese herbal medicine ($p<0.01$), acupuncture ($p<0.05$), Chinese medicine dietary therapy ($p<0.05$) and reflexology ($p<0.05$) was observed in those born overseas than those born in Australia. However, the use of chiropractic by those people born in Australia (18.1%) was almost twice that of those born overseas (9.7 %) ($p<0.001$).

Similar to the finding of overall CAM use, self-reported health status did not seem to significantly affect the use of any specific form of CAM. However, a clearly higher use of some forms of CAM (yoga, Western herbal medicine, aromatherapy and naturopathy) was observed in those with an excellent/very good or good health status. In addition, those who rated their health status as fair or poor tended to have a higher (but not statistically significant) use of acupuncture, Qigong, martial art, Tai Chi, chiropractic, osteopathy, meditation, clinical nutrition and energy healing.

With respect to educational background, for each of the 17 forms of CAM higher use was observed in those with post-secondary education, although a statistically significant difference was only observed in the use of acupuncture, Chinese herbal medicine, Western herbal medicine, Western therapeutic massage, homeopathy, naturopathy, meditation, aromatherapy, clinical nutrition and yoga. Very similar findings were found in participants' employment status, that is, people who were employed at the time of the survey also had a higher rate of CAM use, except for osteopathy and energy healing. For the latter two categories of users, those unemployed or not in the labour force, had a slightly higher rate of CAM use ($p>0.05$).

Private health insurance funds in Australia provide limited coverage of a number of CAM therapies, such as acupuncture, chiropractic and massage therapy. The common view of the correlation between CAM use and insurance cover is that those covered by private health insurance would be more likely to choose some specific forms of CAM, as they can claim for limited reimbursements for those types of CAM therapies. This hypothesis was confirmed by most users but not users of aromatherapy, Chinese medicine dietary therapy, as well as Qigong, Tai Chi and martial art. Among all CAM therapies, there was a statistically significant difference between those covered by private health insurance and those who are not on the use of chiropractic ($p<0.01$) and Western massage therapy ($p<0.01$).

As for most Western countries, the cost related to seeing a CAM practitioner and/or the use of CAM products are mainly borne by the consumers themselves. Thus, the use of CAM may be partially determined by the affordability of that CAM therapy/product. This hypothesis is generally acceptable for most forms of CAM used by the current survey participants. The most significant income differential was for chiropractic and aromatherapy users. Only approximately one tenth of the survey participants with an overall household income of less than $20,000 had used chiropractic (7.5%) or aromatherapy (10.1%), whereas the prevalence of use of these therapies doubled to approximately 20% among those with an income between $20,000 and $40,000, and among those with incomes exceeding $40,000.

The tests of significance mentioned above between categories were conducted without controlling the potential cross-effects (referred to as interaction in statistical analyses) among predictor variables. For example, those employed may also have higher household incomes and be covered by private health insurance. Due to this, a multivariate logistic regression analysis that considers the correlation between variables was also carried out.

Table 4.6 Socio-demographic characteristics on users of each of the 17 forms of CAM

Characteristics	Percents (standard error) of use of –								
	Acupuncture	CHM	CTM	CMDT	QGMATC	WHM	WTM	Chiropractic	Osteopathy
Gender									
Female	9.6 (1.27)	7.7 (1.15)	5.8 (1.01)	3.0 (0.73)	7.2 (1.12)	20.2 (1.73)	33.3 (2.03)	17.1 (1.62)	5.8 (1.01)
Male	8.9 (1.24)	6.1 (1.04)	4.3 (0.89)	1.7 (0.57)	4.6 (0.91)	12.3 (1.43)**	21.0 (1.77)**	15.0 (1.55)	3.3 (0.78)*
Age (year)									
18-34	7.6 (1.46)	8.1 (1.49)	5.7 (1.27)	2.3 (0.82)	9.5 (1.61)	16.3 (2.03)	33.8 (2.59)	15.0 (1.96)	3.1 (0.96)
35-64	10.3 (1.30)	7.8 (1.15)	5.6 (0.98)	2.8 (0.71)	4.7 (0.90)**	17.7 (1.63)	27.7 (1.91)	16.7 (1.60)	5.0 (0.93)
65+	9.2 (2.13)	2.6 (1.16)**	2.4 (1.12)*	1.1 (0.78)	2.9 (1.23)**	12.3 (2.42)	13.9 (2.55)**	15.7 (2.68)	5.9 (1.74)
Country of birth									
Australia	10.2 (1.06)	5.5 (0.80)	4.7 (0.74)	1.7 (0.45)	6.2 (0.84)	15.9 (1.28)	28.2 (1.58)	18.1 (1.35)	4.8 (0.75)
Overseas	6.5 (1.56)*	11.1(2.00)**	6.4 (1.55)	4.7 (1.34)*	5.2 (1.40)	17.7 (2.42)	25.0 (2.75)	9.8 (1.89)**	3.8 (1.21)
Self-reported health status									
Excellent/very good/good	8.6 (0.93)	6.9 (0.85)	5.1 (0.73)	2.8 (0.55)	5.8 (0.78)	17.1 (1.25)	27.3 (1.48)	15.2 (1.19)	4.5 (0.69)
Fair/poor	12.1 (2.57)	6.4 (1.93)	4.9 (1.70)	0.0 (0.00)**	6.4 (1.93)	11.8 (2.54)	26.3 (3.47)	20.6 (3.19)	4.8 (1.68)
Post-secondary education									
No	6.4 (1.15)	4.7 (0.99)	4.7 (0.99)	1.9 (0.64)	4.9 (1.01)	13.0 (1.58)	20.8 (1.90)	15.4 (1.70)	3.6 (0.87)
Yes	11.3 (1.29)**	8.7 (1.15)**	5.4 (0.92)	2.7 (0.66)	6.8 (1.03)	18.8 (1.59)**	32.2 (1.90)**	16.7 (1.52)	5.3 (0.91)
Employment									
Employed	9.8 (1.13)	8.1 (1.04)	6.0 (0.90)	2.9 (0.64)	6.4 (0.93)	17.4 (1.45)	29.7 (1.74)	16.8 (1.42)	4.5 (0.79)
Unemployed/not in labour force	7.8 (1.40)	4.6 (1.10)*	3.5 (0.97)	1.3 (0.60)	5.1 (1.16)	14.4 (1.84)	22.5 (2.19)**	14.5 (1.85)	4.7 (1.11)
Private health insurance									
Yes	10.8 (1.27)	7.3 (1.07)	5.7 (0.95)	2.3 (0.62)	5.8 (0.96)	17.2 (1.55)	32.5 (1.92)	19.0 (1.61)	5.6 (0.94)
No	7.4 (1.21)	6.6 (1.15)	4.3 (0.94)	2.4 (0.71)	6.3 (1.12)	14.8 (1.65)	20.9 (1.88)**	12.4 (1.53)**	3.3 (0.83)
Annual household income									
<A$20,000	8.1 (2.16)	5.9 (1.88)	3.7 (1.49)	2.8 (1.32)	6.2 (1.91)	12.1 (2.59)	18.3 (3.07)	7.3 (2.07)	6.7 (1.99)
A$20,000 – A$40,000	7.0 (1.79)	7.6 (1.85)	4.0 (1.37)	2.0 (0.98)	7.0 (1.78)	19.3 (2.76)	23.6 (2.97)	19.0 (2.74)**	1.3 (0.79)*
>A$40,000	10.1 (1.27)	6.9 (1.07)	5.5 (0.96)	2.2 (0.62)	5.3 (0.94)	17.2 (1.59)	32.2 (1.97)**	18.4 (1.63)**	5.5 (0.96)

Note 1: probability of proportion being significantly different from the first value in each demographic category * $p<0.05$, ** $p<0.01$; significance levels were adjusted to allow for multiple comparisons. Note 2: CHM: Chinese herbal medicine; CTM: Chinese therapeutic massage; CMDT: Chinese medicine dietary therapy; QGMATC: Qigong, Martial art and Tai Chi; WHM: Western herbal medicine, WTM: Western therapeutic massage.

Table 4.6 Socio-demographic characteristics on users of each of the 17 forms of CAM (continued)

Characteristic	Percents % (standard error) of use of –							
	Homeopathy	Naturopathy	Meditation	Aromatherapy	Clinical nutrition	Energy healing	Reflexology	Yoga
Gender								
Female	6.6 (1.07)	14.2 (1.50)	19.3 (1.70)	24.0 (1.84)	51.5 (2.15)	9.9 (1.29)	5.5 (0.98)	16.6 (1.61)
Male	5.5 (0.99)	7.1 (1.11)**	15.6 (1.58)	8.1 (1.19)*	40.1 (2.13)**	4.0 (0.85)**	2.7 (0.71)*	7.3 (1.13)**
Age (year)								
18-34	5.9 (1.30)	11.1 (1.72)	18.1 (2.11)	19.9 (2.19)	53.6 (2.73)	7.2 (1.42)	3.2 (0.97)	20.4 (2.21)
35-64	6.6 (1.06)	11.5 (1.36)	18.3 (1.65)	17.8 (1.63)	44.9 (2.13)*	7.3 (1.11)	3.9 (0.83)	8.4 (1.18)**
65+	4.6 (1.55)	7.5 (1.94)	13.6 (2.53)	4.2 (1.48)*	35.4 (3.52)**	5.0 (1.61)	5.7 (1.71)	7.9 (1.99)**
Country of birth								
Australia	5.0 (0.76)	10.6 (1.08)	17.0 (1.32)	17.2 (1.32)	45.4 (1.75)	7.5 (0.92)	3.3 (0.63)	11.7 (1.13)
Overseas	8.8 (1.80)	11.0 (1.99)	18.4 (2.46)	13.2 (2.15)	47.3 (3.17)	5.5 (1.45)	7.0 (1.62)*	13.5 (2.16)
Self-reported health status								
Excellent/very good/good	6.0 (0.79)	10.9 (1.04)	16.7 (1.24)	16.6 (1.24)	45.6 (1.66)	6.1 (0.80)	4.1 (0.66)	12.9 (1.11)
Fair/poor	5.9 (1.85)	9.4 (2.30)	21.1 (3.21)	13.5 (2.69)	46.7 (3.93)	11.2 (2.48)	3.8 (1.51)	6.8 (1.98)**
Post-secondary education								
No	4.0 (0.92)	8.2 (1.29)	11.9 (1.52)	12.7 (1.56)	38.1 (2.28)	5.7 (1.09)	3.6 (0.87)	7.4 (1.23)
Yes	7.4 (1.07)*	12.5 (1.34)*	21.7 (1.67)**	18.9 (1.59)**	52.0 (2.03)**	8.0 (1.10)	4.6 (0.85)	15.6 (1.48)**
Employment								
Employed	6.9 (0.96)	12.4 (1.25)	17.8 (1.46)	18.4 (1.48)	50.2 (1.91)	6.8 (0.96)	4.1 (0.75)	13.1 (1.28)
Unemployed or not in labour force	4.7 (1.11)	7.5 (1.38)**	15.7 (1.91)	12.1 (1.71)**	39.1 (2.56)**	6.8 (1.32)	4.1 (1.04)	10.6 (1.61)
Private health insurance								
Yes	6.5 (1.01)	11.3 (1.30)	18.0 (1.58)	15.7 (1.49)	48.5 (2.05)	7.0 (1.04)	4.5 (0.85)	12.6 (1.36)
No	5.4 (1.04)	9.8 (1.38)	16.8 (1.73)	16.9 (1.73)	42.8 (2.29)	7.0 (1.18)	3.7 (0.88)	11.4 (1.47)
Annual household income								
<A$20,000	4.8 (1.69)	6.9 (2.01)	17.5 (3.01)	10.1 (2.40)	36.3 (3.81)	6.5 (1.96)	2.5 (1.25)	6.9 (2.01)
A$20,000 – A$40,000	6.3 (1.70)	11.7 (2.25)	16.9 (2.62)	20.4 (2.82)**	42.9 (3.46)	7.8 (1.87)	7.0 (1.79)*	9.9 (2.09)
>A$40,000	5.9 (0.99)	11.0 (1.32)	18.6 (1.64)	17.2 (1.59)*	49.7 (2.11)**	7.2 (1.09)	3.7 (0.79)	14.2 (1.47)**

Note 1: probability of proportion being significantly different from the first value in each demographic category * $p<0.05$, ** $p<0.01$
Note 2: significance levels were adjusted to allow for multiple comparisons.

4.1.5 Visits to CAM Practitioners

4.1.5.1 Prevalence of Visiting CAM Practitioners

Almost two thirds (64.0%, 95%CI: 60.5% – 67.5%) of CAM users had visited a CAM practitioner in the previous 12 months (Table 4.7). Not surprisingly, there were considerable differences between the 17 forms of CAM in the proportions of practitioner visits. For example, in the 12 months preceding the survey, only about one sixth (16.4%) of clinical nutrition users had consulted a practitioner, whereas about one third (32.9%) of Chinese herbal medicine users and 29.1% of Western herbal medicine users had visited a practitioner. As might have been expected, the highest proportions of practitioner visits were by users of provider-based CAM therapies, such as chiropractic (90.6%), acupuncture (81.1%), osteopathy (76.4%) and Western massage therapy (73.7%) (Table 4.7). It is a safety concern and perhaps somewhat puzzling that nearly one in 10 chiropractic users and approximately one in five users of acupuncture, osteopathy or Western massage therapy did not visit a relevant practitioner.

The actual proportion of participants who had visited a CAM practitioner in the preceding 12 months was 44.1% (95%CI: 41.1% – 47.1%) of the total survey participants (Table 4.8). Of the total practitioner visits, Western massage therapist visits was found to be the most popular (20.1%, 95%CI: 17.7% – 22.5%); high prevalence was also observed in visits to chiropractors (14.6, 95%CI: 12.4% – 16.7%) and acupuncturists (7.5%, 95%CI: 5.9% – 9.15).

Table 4.7 Percentage of CAM users that visited practitioners for 17 forms of CAM

Type of CAM*	Percentage**		
	%	95% CI	RSE† (%)
Clinical nutrition	16.4	(13.1 – 19.7)	10.2
Western massage therapy	73.7	(68.6 – 78.8)	3.5
Meditation	23.7	(17.6 – 29.8)	13.2
Western herbal medicine	29.1	(22.4 – 35.8)	11.8
Aromatherapy	19.3	(13.4 – 25.2)	15.6
Chiropractic	90.6	(86.2 – 95.0)	2.5
Yoga	56.9	(48.3 – 65.5)	7.7
Naturopathy	55.8	(46.7 – 64.9)	8.3
Acupuncture	81.1	(73.4 – 88.8)	4.9
Chinese herbal medicine	32.9	(22.2 – 43.6)	16.6
Energy healing	46.7	(35.3 – 58.1)	12.4
Homeopathy	47.7	(35.5 – 59.9)	13.1
Qigong, martial art and Tai Chi	53.3	(41.1 – 65.5)	11.7
Chinese therapeutic massage	62.2	(49.3 – 75.1)	10.6
Osteopathy	76.4	(64.5 – 88.3)	7.9
Reflexology	51.5	(36.7 – 66.3)	14.6
Chinese medicine dietary therapy	24.8	(7.9 – 41.7)	34.8††
At least 1 of the above forms of CAM	**64.0**	**(60.5 – 67.5)**	**2.8**

* Types of CAM are listed in descending order of the type of CAM prevalence

** Percentages are of users that visited a practitioner of a specific type of CAM

† RSE: relative standard error = (standard error/estimated prevalence)*100

†† Relative standard error >25%, results to be interpreted with caution

Table 4.8 Percentage of participants that visited practitioners for 17 forms of CAM

Type of CAM*	Percentage**		
	%	95% CI	RSE† (%)
Western massage therapy	20.1	(17.7 – 22.5)	6.1
Chiropractic	14.6	(12.4 – 16.7)	7.4
Acupuncture	7.5	(5.9 – 9.1)	10.8
Clinical nutrition	7.5	(5.9 – 9.1)	10.8
Yoga	6.8	(5.3 – 8.4)	11.3
Naturopathy	5.9	(4.5 – 7.4)	12.2
Western herbal medicine	4.7	(3.5 – 6.0)	13.7
Meditation	4.1	(2.9 – 5.3)	14.7
Osteopathy	3.5	(2.4 – 4.6)	16.1
Energy healing	3.2	(2.2 – 4.3)	16.7
Qigong, martial art and Tai Chi	3.2	(2.1 – 4.2)	16.9
Chinese therapeutic massage	3.2	(2.1 – 4.2)	17.0
Aromatherapy	3.1	(2.1 – 4.2)	17.1
Homeopathy	2.9	(1.9 – 3.9)	17.8
Chinese herbal medicine	2.3	(1.4 – 3.2)	20.0
Reflexology	2.1	(1.3 – 3.0)	20.8
Chinese medicine dietary therapy	0.6	(0.1 – 1.0)	40.1††
At least 1 of the above forms of CAM	**44.1**	**(41.1 – 47.1)**	**3.5**

* Types of CAM are listed in descending order of the prevalence of CAM practitioner visits

** Percentages are of survey participants that visited a practitioner of a specific type of CAM

† RSE: relative standard error = (standard error /estimated prevalence)*100

†† Relative standard error >25%, results to be interpreted with caution

4.1.5.2 Frequency of CAM Practitioners Visits

The number of practitioner visits by survey participants during the 12 months preceding the survey was determined for the 10 most common provider-based CAM therapies (Table 4.9). Thirty seven percent (37.0%, 95%CI: 34.2% – 40.0%) of the participants had visited a practitioner of at least one of the 10 forms of CAM listed in Table 4.9, on at least one occasion in the 12-month period. The highest mean number of visits was for users of acupuncture (8.8), closely followed by users of chiropractic (8.4) (see Appendix G2 for the original unweighted data and Appendix G3, statistical summary of weighted data).

The average number of visits to one or more of the types of CAM practitioners in Table 4.9, over the 12-month period was 12.1, which when extrapolated to the national adult population, equates to 69.2 million visits. Almost one third of these (32.1%) were to a massage therapist (Western and Chinese therapeutic massage) and over one quarter (27.5%) were to chiropractors, that is, adult Australians made 22.2 million visits to massage therapists and 19.0 million visits to chiropractors in the 12-month period.

Table 4.9 Frequency of visits to practitioners for 10 forms of CAM

Type of CAM	Survey participants	Estimate for national population*
	Mean (95% CI)	Million (95% CI)
Acupuncture	8.75 (5.2 – 12.3)	10.16 (6.0 – 14.3)
Chiropractic	8.44 (6.5 – 10.4)	19.05 (14.6 – 23.5)
Homeopathy	6.65 (1.9 – 11.4)	2.97 (0.8 – 5.1)
Western massage	6.29 (5.1 – 7.5)	19.55 (15.9 – 23.2)
Chinese herbal medicine	5.98 (3.5 – 8.5)	2.12 (1.2 – 3.0)
Osteopathy	5.69 (3.8 – 7.6)	3.08 (2.0 – 4.1)
Chinese therapeutic massage	5.43 (3.2 – 7.7)	2.66 (1.6 – 3.8)
Naturopathy	5.32 (2.9 – 7.7)	4.87 (2.7 – 7.0)
Aromatherapy†	3.98 (1.8 – 6.2)	1.93 (0.9 – 3.0)
Western herbal medicine	3.75 (2.7 – 4.8)	2.76 (2.0 – 3.5)
Visits to one or more of the above CAM practitioners	**12.1 (10.0 –14.2)**	**69.15 (57.6 – 81.4)**

* Based on an adult Australian population of 15.5 million and corresponding prevalence of CAM practitioner visits as estimated in the current study (see Table 4.8).

† Adjusted mean after excluding two obvious outliers

4.1.5.3 Characteristics of People Visiting CAM Practitioners

Table 4.10 shows the socio-demographic profiles of survey participants who had visited a CAM practitioner during the preceding 12 months. In general, the findings for practitioner visits were in accord with those for CAM users. That is, higher proportions of those who visited CAM practitioners were female, younger adults, people with higher levels of education, those with private health insurance, and those who had higher household incomes. However, it is of interest that there was less variation between Australian states in the proportions of participants who had visited a CAM practitioner than in the proportions of CAM users. Detailed analyses of the possible regional differences are presented in Chapter 5.

Despite the similarities in the socio-demographic profiles of CAM users and those who had visited CAM practitioners, there were some differences. Thus, there was no statistically significant difference between the proportions of employed and unemployed participants that visited CAM practitioners or in the proportions in the two younger age ranges (Table 4.11). On the other hand, unlike the findings for CAM users, significantly more participants who visited CAM practitioners were born in Australia than born overseas and a higher proportion had household incomes of $20,000-$40,000 than less than $20,000 (Table 4.11).

Table 4.11 presents a detailed cross-tabulation analyses that reveals the proportions of survey participants with the specified socio-demographic characteristics who had visited practitioners for each of the 17 forms of CAM. The overall pattern of the characteristics' differentials was similar to the findings discussed above relating to the users of each of the 17 forms of CAM, although a statistically significant difference was more commonly detected in visiting provider-based CAM practitioner, such as acupuncture, massage therapy and osteopathy.

Table 4.10 Characteristics of people who had visited CAM practitioners

Socio-demographic characteristic	Visited CAM practitioners	
	% (95%CI)	p value†
Gender		
Male	38.9 (34.7 – 43.1)	
Female	49.2 (45.0 – 53.4)	<0.001
Age range (year)		
18-34	48.1 (42.7 – 53.5)	
35-64	45.0 (40.8 – 49.2)	>0.05
65+	34.9 (28.0 – 41.8)	<0.01
Country of birth		
Australia	46.5 (43.1 – 49.9)	
Other	36.7 (30.7 – 42.7)	<0.01
Region		
New South Wales	45.0 (39.9 – 50.1)	
Victoria	48.0 (42.0 – 54.0)	>0.05
Queensland	41.4 (34.7 – 48.1)	>0.05
South Australia	44.5 (33.8 – 55.2)	>0.05
Western Australia	42.0 (32.6 – 51.4)	>0.05
Self-reported health status		
Excellent/very good/good	43.6 (40.4 – 46.8)	
Fair/poor	46.7 (39.0 – 54.4)	>0.05
Post-secondary education		
No	35.7 (31.3 – 40.1)	
Yes	50.8 (46.8 – 54.8)	<0.001
Employment		
Employed	46.3 (42.6 – 50.0)	
Unemployed or not in labour force	40.1 (35.1 – 45.1)	>0.05
Private health insurance		
Yes	49.3 (45.3 – 53.3)	
No	37.9 (33.5 – 42.3)	<0.001
Annual household income (A$)		
<20,000	30.3 (23.2 – 37.4)	
$20,000 - 40,000	43.2 (36.4 – 50.0)	<0.05
>40,000	49.0 (44.9 – 53.1)	<0.001

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

Table 4.11 Characteristics of people who had visited practitioners for each of the 17 forms of CAM

Characteristic	Percentages (standard error) of people of visiting a practitioner for –								
	ACU	CHM	CTM	CMDT	QGMATC	WHM	WTM	Chiropractic	Osteopathy
Gender									
Female	6.9 (1.09)	2.1 (0.62)	3.6 (0.81)	0.6 (0.34)	3.3 (0.77)	5.9 (1.02)	23.0 (1.81)	15.3 (1.55)	4.0 (0.84)
Male	8.1 (1.18)	2.5 (0.67)	2.6 (0.70)	0.5 (0.32)	3.1 (0.75)	3.5 (0.80)	17.1 (1.64)*	13.8 (1.50)	3.0 (0.74)
Age (year)									
18-34	6.2 (1.32)	2.6 (0.87)	3.9 (1.06)	0.2 (0.26)	5.9 (1.29)	5.7 (1.27)	26.0 (2.40)	13.7 (1.88)	2.7 (0.90)
35-64	8.6 (1.20)	2.7 (0.69)	3.1 (0.74)	0.9 (0.39)	2.1 (0.62)**	5.0 (0.93)	20.2 (1.72)	15.1 (1.53)	4.1 (0.84)
65+	6.7 (1.84)	0.7 (0.61)	2.0 (1.03)	0.4 (0.47)	1.5 (0.90)**	2.2 (1.09)*	9.5 (2.16)**	14.6 (2.60)	3.1 (1.28)
Country of birth									
Australia	8.1 (0.96)	2.2 (0.52)	3.2 (0.62)	0.5 (0.24)	3.7 (0.66)	4.2 (0.70)	21.1 (1.43)	16.2 (1.30)	3.7 (0.67)
Other	5.8 (1.49)	2.6 (1.01)	3.2 (1.11)	0.9 (0.60)	1.7 (0.82)	6.8 (1.59)	17.2 (2.40)	9.5 (1.86)**	2.7 (1.04)
Self-reported health status									
Excellent/very good/good	7.1 (0.85)	2.3 (0.50)	2.8 (0.55)	0.7 (0.27)	3.2 (0.58)	4.9 (0.72)	19.9 (1.33)	14.1 (1.16)	3.6 (0.62)
Fair/poor	9.2 (2.28)	2.2 (1.14)	4.9 (1.70)	0.0 (0.00)**	2.5 (1.23)	3.9 (1.53)	20.6 (3.19)	16.5 (2.92)	3.0 (1.34)
Post-secondary education									
No	4.7 (0.99)	1.5 (0.57)	2.8 (0.78)	0.4 (0.30)	1.9 (0.63)	3.3 (0.84)	12.8 (1.57)	13.4 (1.60)	2.2 (0.69)
Yes	9.5 (1.19)**	2.9 (0.68)	3.4 (0.74)	0.7 (0.34)	4.2 (0.81)*	5.8 (0.95)*	25.7(1.78)**	15.6 (1.48)	4.5 (0.84)*
Employment									
Employed	8.4 (1.06)	2.7 (0.62)	3.6 (0.71)	0.7 (0.31)	3.6 (0.71)	5.4 (0.86)	22.0 (1.58)	15.3 (1.37)	4.0 (0.74)
Unemployed or not in labour force	5.3 (1.17)	1.5 (0.64)	2.5 (0.81)	0.4 (0.35)	2.5 (0.82)	3.8 (1.00)	16.6 (1.95)*	13.4 (1.78)	2.7 (0.85)
Private health insurance									
Yes	9.3 (1.19)	2.9 (0.69)	3.6 (0.76)	0.6 (0.32)	3.2 (0.72)	4.4 (0.84)	24.9 (1.77)	17.7 (1.57)	4.9 (0.89)
No	5.3 (1.03)**	1.5 (0.57)	2.7 (0.75)	0.6 (0.35)	3.2 (0.81)	5.2 (1.03)	14.2 (1.62)**	10.6 (1.43)**	1.7 (0.60)**
Annual household income (A$)									
<20,000	4.4 (1.64)	1.0 (0.80)	1.5 (0.95)	1.5 (0.97)	3.0 (1.36)	4.3 (1.61)	9.3 (2.30)	6.3 (1.93)	4.3 (1.61)
$20,000 - 40,000	6.3 (1.69)	2.9 (1.18)	3.2 (1.23)	0.4 (0.45)	3.3 (1.25)	7.2 (1.80)	15.1 (2.50)	17.2 (2.64)**	0.9 (0.65)*
>40,000	8.7 (1.19)*	2.1 (0.60)	3.7 (0.79)	0.4 (0.26)	3.0 (0.72)	4.6 (0.88)	26.2 (1.85)**	17.3 (1.59)**	4.7 (0.89)

Note 1: probability of proportion being significantly different from the first value in each demographic category (Z test) * $p<0.05$, ** $p<0.01$; Note 2: significance levels were adjusted to allow for multiple comparisons; Note3: CHM: Chinese herbal medicine; CTM: Chinese therapeutic massage; CMDT: Chinese medicine dietary therapy; QGMATC: Qigong, Martial art and Tai Chi; WHM: Western herbal medicine, WTM: Western therapeutic massage.

Table 4.11 Socio-demographic characteristics and visits to practitioners of each of the 17 forms of CAM (continued)

Characteristic	Percentages (standard error) of people of visiting a practitioner for –							
	Homeopathy	Naturopathy	Meditation	Aromatherapy	Clinical nutrition	Energy healing	Reflexology	Yoga
Gender								
Female	3.9 (0.83)	9.0 (1.23)	3.8 (0.82)	4.5 (0.89)	10.1 (1.30)	4.6 (0.91)	2.6 (0.69)	9.2 (1.25)
Male	1.9 (0.59)*	2.9 (0.73)**	4.5 (0.90)	1.7 (0.56)**	4.9 (0.94)**	1.8 (0.58)**	1.6 (0.55)	4.4 (0.90)**
Age (year)								
18-34	2.1 (0.78)	6.2 (1.32)	6.3 (1.34)	4.3 (1.11)	9.7 (1.62)	4.5 (1.13)	3.2 (0.97)	12.5 (1.81)
35-64	3.5 (0.78)	6.5 (1.05)	3.5 (0.79)	3.5 (0.78)	6.5 (1.06)	3.3 (0.76)	1.8 (0.57)	4.4 (0.88)**
65+	2.6 (1.17)	4.0 (1.44)	2.0 (1.04)*	0.0 (0.00)**	6.5 (1.81)	1.1 (0.77)*	1.1 (0.77)	4.1 (1.46)**
Country of birth								
Australia	2.4 (0.53)	5.6 (0.81)	4.5 (0.73)	3.0 (0.60)	7.4 (0.92)	3.0 (0.60)	1.5 (0.43)	6.4 (0.86)
Overseas	3.8 (1.21)	7.3 (1.65)	3.1 (1.10)	3.5 (1.17)	7.1 (1.63)	4.1 (1.26)	4.2 (1.27)*	8.4 (1.76)
Self-reported health status								
Excellent/very good/good	2.7 (0.54)	6.0 (0.79)	4.2 (0.67)	3.4 (0.60)	6.8 (0.84)	2.9 (0.56)	2.2 (0.49)	7.8 (0.89)
Fair/poor	4.0 (1.55)	5.7 (1.82)	4.0 (1.54)	1.7 (1.01)	11.5 (2.51)	4.4 (1.61)	0.8 (0.72)	1.1 (0.83)**
Post-secondary education								
No	1.9 (0.64)	4.8 (1.01)	2.6 (0.75)	2.4 (0.71)	6.0 (1.12)	2.1 (0.68)	1.2 (0.52)	4.0 (0.92)
Yes	3.7 (0.76)	6.8 (1.03)	5.4 (0.92)*	3.7 (0.77)	8.7 (1.14)	4.1 (0.81)	2.8 (0.67)	9.0 (1.17)**
Employment								
Employed	3.1 (0.66)	7.2 (0.99)	4.5 (0.79)	3.4 (0.69)	8.8 (1.08)	3.2 (0.67)	2.3 (0.57)	7.4 (1.00)
Unemployed or not in labour force	2.6 (0.83)	3.8 (1.00)*	2.5 (0.82)	2.5 (0.81)	5.4 (1.18)*	3.5 (0.97)	1.8 (0.70)	6.1 (1.25)
Private health insurance								
Yes	3.3 (0.74)	6.7 (1.02)	4.0 (0.81)	3.4 (0.75)	8.8 (1.16)	3.4 (0.74)	2.4 (0.62)	7.8 (1.10)
No	2.1 (0.67)	4.9 (1.00)	4.4 (0.95)	2.7 (0.76)	5.8 (1.08)	3.1 (0.81)	1.8 (0.62)	5.7 (1.07)
Annual household income (A$)								
<20,000	2.5 (1.23)	2.3 (1.19)	3.0 (1.34)	2.4 (1.22)	5.4 (1.79)	3.3 (1.42)	0.0 (0.00)	2.7 (1.30)
$20,000 - 40,000	3.3 (1.24)	6.8 (1.75)*	3.0 (1.19)	2.2 (1.02)	7.7 (1.87)	4.0 (1.36)	3.0 (1.20)*	5.1 (1.54)
>40,000	2.7 (0.68)	6.4 (1.03)**	5.4 (0.95)	4.1 (0.83)	7.0 (1.07)	3.4 (0.76)	2.4 (0.65)**	9.2 (1.22)**

Note 1: probability of proportion being significantly different from the first value in each demographic category (Z test) * $p<0.05$, ** $p<0.01$
Note 2: significance levels were adjusted to allow for multiple comparisons

4.1.6 Use of Other Forms of CAM

4.1.6.1 Prayer

In addition to the 17 major forms of CAM investigated, participants were asked about their use of prayer and "other forms of CAM not mentioned elsewhere in the survey". In total, one in five (20.8%, 95%CI: 18.4% – 23.2%) surveyed participants had prayed in the 12 months prior to the survey. Of these, over a quarter (25.7%, 95%CI: 20.0% – 31.4%) had visited a prayer practitioner, such as a priest, in the 12-month period. A proportion of participants also mentioned that they prayed or visited a professional to pray for their health or someone else's health. Detailed percentages of such use, however, were not recorded.

Presented in Table 4.12 is the demographic information related to prayer users and people who had visited a practitioner for the purpose of praying. Importantly, the answers recorded on prayer did not differentiate between "prayer for personal health purposes" and "prayer for religious purposes". The latter is not normally regarded as complementary or alternative health care.

As opposed to the overall use of the 17 specific forms of CAM, the proportion (26.7%) of adults aged 65 or older who had prayed for any reason was much higher than the proportion among younger adults aged 18-34 (17.9%, $p<0.05$) who had prayed. It is interesting to note that a statistically significant difference was found between those having a lower household income (less than $20,000, with a prevalence of 26.7%) and those having a relatively high household income (more than $40,000, with a prevalence of 17.2%, $p<0.05$).

Table 4.12 Socio-demographic characteristics on users of prayer

Characteristic*	Prayer		Visited prayer practitioner	
	% (SE %)	P value†	% (SE %)	p value†
Gender				
Female	25.3 (1.87)		6.1 (1.03)	
Male	16.1 (1.60)	<0.001	4.5 (0.90)	>0.05
Age (year)				
18-34	17.9 (2.10)		3.7 (1.04)	
35-64	20.2 (1.72)	>0.05	5.4 (0.97)	>0.05
65+	26.7 (3.26)	<0.05	7.4 (1.93)	>0.05
Country of Birth				
Australia	20.1 (1.41)		5.3 (0.79)	
Non-Australia	21.9 (2.62)	>0.05	4.7 (1.35)	>0.05
Region				
New South Wales	19.2 (2.08)		4.9 (1.14)	
Victoria	22.3 (2.54)	>0.05	6.3 (1.48)	>0.05
Queensland	23.4 (2.95)	>0.05	6.7 (1.73)	>0.05
South Australia	19.6 (4.36)	>0.05	5.3 (2.46)	>0.05
Western Australia	15.7 (3.54)	>0.05	2.9 (1.65)	>0.05
Self-reported health status				
Excellent/very good/good	19.5 (1.32)		5.0 (0.73)	
Fair/poor	27.9 (3.53)	<0.05	6.9 (2.00)	>0.05
Post-secondary education				
No	18.3 (1.81)		4.2 (0.94)	
Yes	22.6 (1.70)	>0.05	6.2 (0.98)	>0.05
Employment				
Employed	19.4 (1.51)		5.4 (0.86)	
Unemployed or not in labour force	24.0 (2.24)	>0.05	5.4 (1.18)	>0.05
Private health insurance				
Yes	20.1 (1.64)		6.5 (1.01)	
No	20.9 (1.88)	>0.05	3.7 (0.87)	<0.05
Annual household income				
<A$20,000	26.7 (3.51)		4.7 (1.68)	
A$20,000-A$40,000	22.8 (2.93)	>0.05	5.6 (1.61)	>0.05
>A$40,000	17.2 (1.59)	<0.05	5.3 (0.94)	>0.05

SE: standard error

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

4.1.6.2 Other Forms of CAM

Among all survey participants, less than 5% mentioned the use of forms of other CAM than the 17 named forms of CAM or prayer. Only three participants mentioned that they used other forms of CAM but did not use any of the 17 named CAM therapies or prayer. Diverse answers were provided and none of these therapies had a prevalence of higher than 2% among all participants (Table 4.13).

Table 4.13 The use of other forms of CAM

Type of CAM	Used in Past 12 Months		
	Original (N)	Weighted (%)	RSE (%)*
Other forms of relaxation techniques†	13	1.24	27.3
kinesiology	6	0.60	39.5
Iridology	4	0.36	51.0
Bowen technique	4	0.33	53.2
Bioelectromagnetic-based therapies	3	0.32	54.2
Shiatsu	3	0.25	60.6
Exercise	2	0.22	64.8
Cranio sacral therapy	2	0.17	75.0
Indigenous and aboriginal medicine	2	0.16	76.8
Hypnotherapy	2	0.15	80.2
Ayuveda	1	0.07	119.4
Colonic irrigation	1	0.12	88.2
Ear candling	1	0.11	91.5
Hot bath	1	0.07	113.0
Juice therapy	1	0.08	105.5
Level three reconnection therapy	1	0.07	116.1
Silver clove	1	0.08	105.1
Tae Bo	1	0.07	113.6
Other††	5	0.44	46.0
Total other CAM other than the 17 major CAM and prayer	51	4.6	14.0

* RSE: relative standard error = (standard error /estimated prevalence)*100; a relative standard error >25% indicates that result should be interpreted with caution

† Examples include Pilates and weight-loss exercise

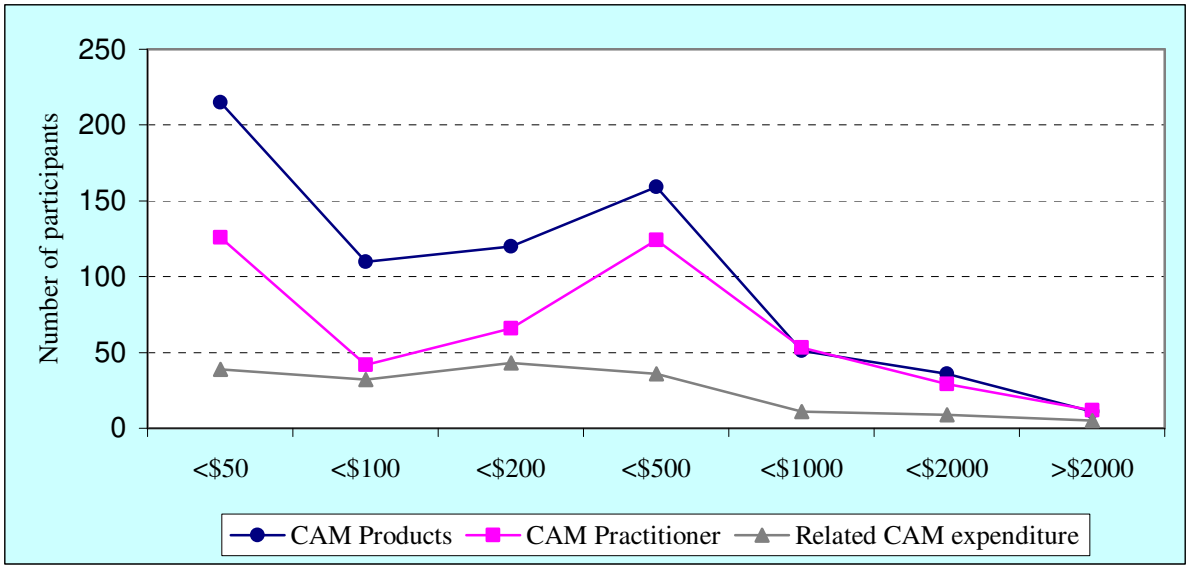
†† Participants did not remember the actual name of the CAM or had stated other forms of CAM, but the interviewers were not able to record the names.

4.1.7 Economic Considerations of CAM Use

4.1.7.1 Overview

CAM users were asked about their "out-of-pocket" annual expenditure on CAM (products, practitioner visits and other related items). Thirty-five CAM users, who did not respond to one or more of the three questions on expenditure, were excluded from the expenditure analysis. The crude expenditure estimations on CAM were skewed toward the lower values (Figure 4.2, raw data). The maximum expenditure reported by CAM users was $10,000, either on CAM products or on CAM practitioners, and $6,000 on other related CAM. Some of the high amounts (e.g. $5,000 spent on visiting CAM practitioners) were recorded by interviewers and verified by the researchers during the CATI telephone interviews. Such values may be considered as the actual expenditure of the users. However, when examining the raw data, a total of 95% users provided an amount of less than $1,500 (see Appendix G4-G6 for the original data and G7 for a statistical summary). Thus, there is a need to adjust for the average expenditure among all CAM users, in order to extrapolate these values to a national level.

Figure 4.2 Frequency distribution of CAM expenditure data



Since the expenditure reported by a small number of participants appeared to be extraordinarily high, in an attempt to exclude aberrant values in total expenditure estimates, those extremely high values (e.g. in general, a value that is higher than the mean±2SD can be considered as a potential outlier) and the same numbers of the lowest value were excluded. To be consistent, these numbers, corresponding approximately to 2.5 % of the highest and the lowest expenditure values were ignored. (presented as adjusted means below).

Using this correction, the estimated annual expenditure by survey participants on CAM products, CAM practitioners and other CAM-related items is summarised in Table 4.14. Thus, based on a total of 15.5 million adult Australians in 2005, together with the estimated CAM prevalence arising from the survey, the Australian national extrapolated total expenditure in the 12 months preceding the survey is estimated as A$4.13 billion (Table 4.14) (see Appendix G8 for the detailed statistics). On the other hand, as mentioned above, it was estimated that adult Australians had made a total of 69.15 million CAM practitioner visits (see Chapter 4.1.5.2). This suggests that the average out-of-pocket expenditure to CAM practitioner visits is estimated at A$25 per visit (i.e. A$1.73 billion divided by 69.15 million visits).

Table 4.14 National out-of-pocket expenditure on CAM

Expenditure by survey participants	**CAM products (65.8%)***	**CAM practitioners (42.3%)***	**Other items related to CAM (16.3%)***
Adjusted mean (SE)†	182.3 (9.3)	263.6 (15.4)	212.3 (23.6)
95% CI	164-200	233-294	166-259
Median	100	150	100
Range	0-1400	0-2000	12-2000
Estimated national expenditure#	1.86 billion	1.73 billion	0.54 billion

* % of participants that provided estimates

† Lowest and highest 2.5% of estimates ignored (see text)

Based on an adult Australian population of 15.5 million

4.1.7.2 Regional Differences in CAM Expenditure

While CAM prevalence and the prevalence of visiting CAM practitioners in each state in Australia varied considerably, it is also of interest to compare the average expenditure in different regions. Presented in Table 4.15 are adjusted means expenditure for CAM products, CAM practitioners and CAM-related items (weighted), as well as state estimations based on the corresponding state population.

Table 4.15 Regional differences of out-of-pocket expenditure on CAM

	State expenditure (A$)				
Products	**NSW**	**VIC**	**QLD**	**SA**	**WA**
Adjusted mean	186.7	172.7	187.1	187.4	163.2
SE	16.2	18.7	19.8	33.5	28.6
State estimation (million)	664.0	449.4	382.6	128.2	150.9
Test for significant difference via ANOVA:	F (4, 638)=0.20, p=0.938				
Practitioners	**NSW**	**VIC**	**QLD**	**SA**	**WA**
Adjusted mean	285.9	258.6	281.1	204.1	200.3
SE	27.5	28.9	39.9	39.0	38.8
State estimation (million)	644.9	449.2	344.7	106.8	121.7
Test for significant difference via ANOVA:	F (4, 410)=0.952, p=0.434				
Other items related to CAM	**NSW**	**VIC**	**QLD**	**SA**	**WA**
Adjusted mean	211.1	176.0	321.4	235.9	171.3
SE	26.1	45.3	90.2	83.5	51.8
State estimation (million)	181.5	122.7	111.0	52.5	48.0
Test for significant difference via ANOVA:	F (4, 156)=0.964, p=0.429				

SE: standard error; NSW: New South Wales; VIC: Victoria; QLD: Queensland; SA: South Australia; WA: Western Australia.

For CAM products, it appeared that the average expenditure per user in each state is similar (ANOVA, $F(4, 638)=0.20$, $p>0.05$). In addition, the average amount spent on CAM products in most states is similar to the national expenditure level (A$182.3), although Western Australia users reported a relatively lower average expenditure (A$163.2).

On average, South Australia and Western Australia users appeared to spend less on visiting CAM practitioners than the estimated national average (approximately A$60 less per person per year), although, again, the differences between states were not found to be statistically significant (ANOVA, $F(4,410)=0.952$, $p>0.05$).

A much bigger variation (although not significantly different, ANOVA, $F(4, 156)=0.964$, $p>0.05$) was found between the costs related to CAM use, such as books, equipment and classes. That is, New South Wales and South Australia users had similar costs to the national average; Queensland users had a higher cost, whereas the costs estimated by Victoria and Western Australia users appeared to be relatively low (Table 4.15).

In all, at least one third (36.1%) of the total CAM costs in Australia was spent in New South Wales, a further quarter (24.7%) was spent in Victoria, 20.3% in Queensland, 7.0% in South Australia, 7.8% in Western Australia, and only approximately 4.2% was spent in the remaining states and territories. Rather than the proportions distributed to each state for total CAM costs, individual state expenditure on the costs of each of the CAM products, CAM practitioners or other related CAM items also had similar distributions. For example, at least one third (35.7%) of the total national costs on CAM products was spent in New South Wales, and approximately a quarter (24.2%) was spent in Victoria (Table 4.15).

4.2 Discussion

4.2.1 Prevalence of CAM Use

4.2.1.1 Comparison with Other Australian Studies

Perhaps the most important finding of the present study is that the prevalence of CAM use in Australia is considerably higher than previously estimated. The current study indicates that 68.9% of the Australian population are CAM users, whereas the figure usually quoted is 52.2%.[11] The previous estimate is, in fact, an extrapolation from the findings of a survey conducted within a single Australian state, South Australia, in 2004.[11] Although the types of CAM included in this national study were not identical to those in the previous regional study, it is probable that regional differences account for the higher national estimate of CAM use. Unfortunately, within the national quota, the regional quotas were insufficient to demonstrate what might be real differences in the prevalence of CAM use between Australian states. The current study suggests that only 60.8% of the South Australian cohort were CAM users, whereas for the most populous state, New South Wales, the prevalence of use was 72.1%, and only slightly lower in Queensland (71.0%) and Victoria (69.8%). However, as noted above, statistically significant differences between these regional figures were not demonstrated in the current study.

The findings of the high prevalence of CAM use in several defined states are consistent with previous small-scale regional studies, which were based on randomly selected participants in New South Wales. It was suggested that between 67% and 70.3% of participants used CAM during a 12-month period.[37,38] In line with the current global trend of an increase in the use of CAM over the past decade, the relatively higher prevalence of CAM use as estimated in the present study appears accurate.

It is worth noting that CAM modalities investigated in the current and previous studies varied greatly. Thus, comparisons of the prevalence of individual forms of CAM can only be made with limited forms of CAM. In addition, the previous surveys were conducted in the states of South Australia and New South Wales. Thus, state and national prevalence of CAM use in the current survey are presented (Table 4.16).

Table 4.16 Comparison of CAM prevalence with previous Australian surveys

CAM	Current survey prevalence			Regional survey prevalence		
	National	NSW	SA	NSW 95[38]	NSW 99[37]	SA 04[11]
Overall	68.9%	72.1%	60.8%	67.0%	70.3%	52.2%
Clinical nutrition*	45.8%	47.3%	43.6%	57.0%†	68.7%	39.2%**
Herbal medicine#	19.8%	20.3%	14.2%	32.0%††	…	20.6%
Chiropractic	16.1%	17.0%	17.0%	…	26.1%	…
Massage therapy#	28.8%	28.7%	25.3%	…	25.1%	…
Homeopathy	6.0%	5.0%	8.9%	3.0-8.0%‡	…	2.2%
Aromatherapy	16.1%	13.8%	10.0%	…	…	11.2%‡‡
Soy products	…	…	…	…	…	3.8%
Chinese medicine	19.3%	17.1%	17.2%	…	…##	2.3%

NSW: New South Wales; SA: South Australia
… Indicates prevalence was not provided in that survey
* Including multivitamins and mineral supplements
\# Includes different forms of massage therapy or herbal medicine
** Prevalence was for vitamins only; the prevalence for mineral supplement was 13.6%, combined prevalence was not presented in the article.
† Includes 18 different nutritional items
†† Western herbal medicine only; total herbal medicine was 33.0%
‡ General homeopathies, 3%, when including other homeopathic remedies, 8.0%
‡‡ Refers to aromatherapy oil
Categories of acupuncture and Chinese medicine were used in the survey, details did not present.

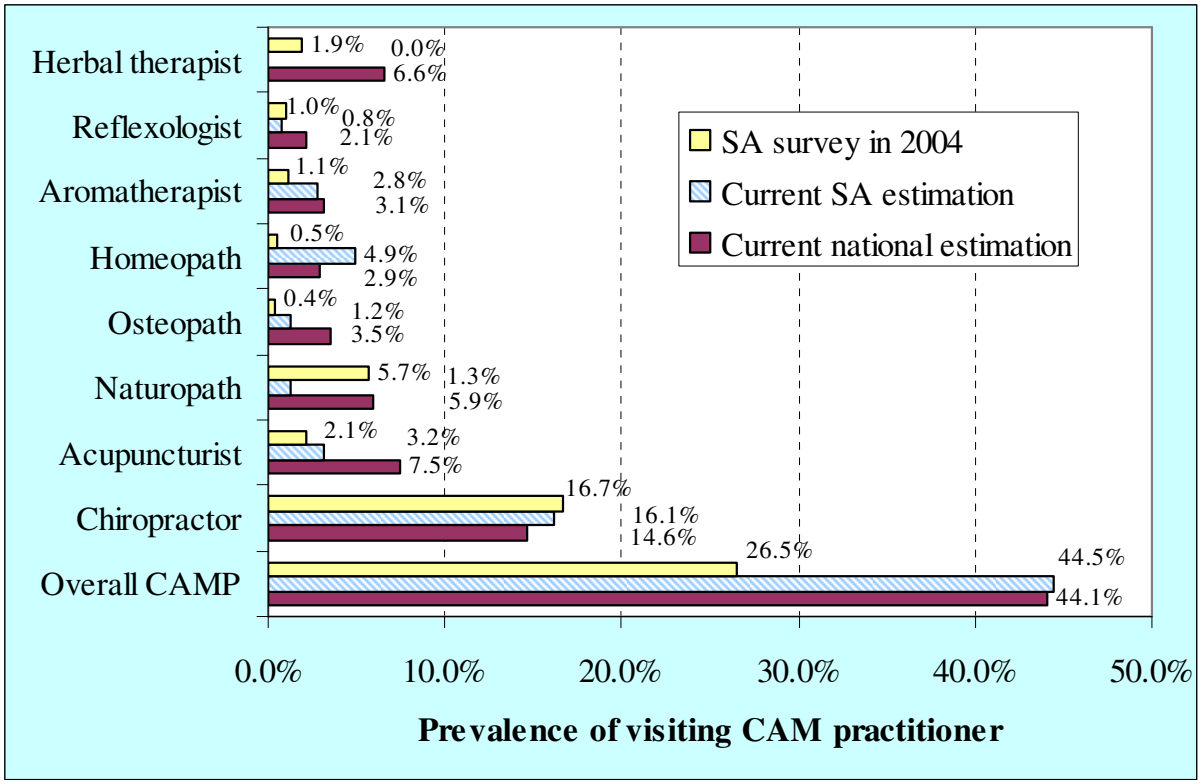
In general, previous regional surveys appear to show a higher individual prevalence of CAM use. For example, the use of clinical nutrition in New South Wales, estimated in the current survey, was 47.3%, while the prevalence in the 1995[38] and 1999[37] New South Wales surveys was higher. However, these regional surveys included a broader range of vitamins and minerals, whereas the current survey specified multivitamins and minerals, rather than daily consumer vitamin (e.g. vitamin A prescribed by a medical doctor). On the other hand, the 39.2% of vitamin prevalence in South Australia was estimated separately from mineral supplements use (13.6%).[11] The combined prevalence is considered no less than the South Australia prevalence as estimated in the current study (43.6%). Similarly, the previously estimated prevalence of chiropractic and herbal medicine in New South Wales[37,38] and the prevalence of herbal medicine in South Australia[11] were also higher than the current estimated prevalence in each of these corresponding states (Table 4.16).

The prevalence of massage therapy use in New South Wales[37,38] and aromatherapy use in South Australia[11] were similar to estimations in the current survey. However, a great variation in the prevalence of homeopathy has been reported. The New South Wales prevalence (5.0%) estimated in the current survey was within the broad range of that from the New South Wales survey in 1995 (3.0%-8.0%).[38] However, a significantly lower prevalence was estimated in South Australia (2.2% in 2004), [11] compared to the current estimation for the state of South Australia (8.9%). These are in contrast to the abovementioned regional differences in the prevalence of individual forms of CAM, where the prevalence of homeopathy in South Australia, as estimated in the current survey was highest, compared to any other state or territory of Australia. Furthermore, after examining the South Australia surveys in 1993,[9] 2000[10] and 2004,[11] it is very surprising that the prevalence of homeopathy decreased substantially from 4.4% in 1993, and 4.3% in 2000 to the most recent estimate of 2.2% in 2004. The large discrepancy in estimated homeopathy use requires further investigation.

Variations in the prevalence of CAM practitioner visits between Australian states were somewhat less than variations in the overall prevalence of CAM use. Based on the current findings, the proportion of the Australian adults that consulted at least one CAM practitioner over a 12-month period was 44.1%. This is again much higher than the prevalence of CAM practitioner visits estimated in the 2004 South Australian study (26.5%).[11] Again, regional differences may, at least in part, explain the difference, although, it is also likely that different CAM modalities in the two studies are a factor. For example, importantly, massage therapy was not included in any one of the recent South Australian CAM surveys,[9-11] whereas a substantial proportion of the current survey participants had visited massage therapists.

Figure 4.3 presents the prevalence of visits to practitioners of eight individual forms of CAM, that were estimated by the 2004 South Australia survey,[11] by the current survey for the State of South Australia, and by the current survey for the whole nation. As noted above, the current survey provides a higher overall prevalence of CAM practitioner visits in South Australia, compared to the estimated prevalence in previous South Australia surveys; this seems to be the same for visits to practitioners of most individual forms of CAM, except naturopaths, herbal therapists, reflexologists and chiropractors.

For visits to reflexologists and chiropractors, the South Australia estimates and the current survey estimates for South Australia were similar. Surprisingly, based on the current survey, none of the herbal medicine users from South Australia had visited practitioners; and the South Australia survey estimated that only 1.9% had visited such practitioners.[11] A low prevalence of visiting herbal medicine practitioners was also observed in both studies. It is also important to note the limitations of the current study in drawing conclusions at a state level. In particular, the relatively small number of interviews that were conducted in South Australia.



Overall CAMP: visits to any one type of CAM practitioners
SA: South Australia

Figure 4.3 Prevalence of visits to CAM practitioners in the current survey and a recent South Australia survey

The prevalence of visits to naturopaths estimated by the South Australia survey[11] (5.7%) was much higher than the current survey estimate for South Australian adults (1.3%) but was similar to the national estimation (5.9%). In the 2004 South Australia study,[11] however, a prevalence of 5.7% was estimated for visits to a naturopath or a natural therapist. The definition of natural therapist is generally broader than the definition of a defined naturopath, and may have contributed to the different finding.

4.2.1.2 Comparison with Overseas Studies

It is of interest to compare the current estimated prevalence of CAM use in Australia with the most recent estimates for the United States (62%),[1] Canada (50%),[6] the United Kingdom (28.3%)[5] and Japan (76.0%).[7] The data were collected through the computer-assisted telephone interview (CATI) method, with the exceptions of the US data, which were through computer-assisted personal interview (CAPI), and the UK data, which were through postal questionnaire. Detailed data collection methods were discussed in Chapter 2.3.2.2.

The comparisons of CAM as a whole among these countries would be less meaningful without the recognition of the limitations of different forms of CAM being included in these surveys. For example, the 62% CAM prevalence as estimated in the 2002 US survey included prayer specifically for health reasons.[1] When prayer for health reasons was excluded from the definition of CAM, only 36% of US adults used CAM in the past 12 months, which is lower than a 1997 US survey conducted by the Harvard Medical School (42.1%).[3]

The 1998 UK study found a 28.3% CAM prevalence.[5] However, the definition of CAM in this study included only eight forms of CAM. The number of CAM investigated was markedly less than the number investigated by most CAM surveys in other countries. In addition, in this UK study, except for over-the-counter homeopathic remedies and herbal remedies, the prevalence of other CAM was based on visits to practitioners rather than actual CAM use. These may have impacted considerably on the overall prevalence of CAM use in the UK. Surprisingly, a more recent survey conducted by the same group of researchers in 2001 found that only an estimated 10.0% of the UK population had received any one of the 23 forms of CAM from practitioners in the past 12 months.[16] Again, this prevalence was for practitioner visits only; the overall prevalence of CAM use in the UK remains unclear.

With respect to the prevalence of specific forms of CAM, this would be clear only if comparisons were made with several common forms of CAM. Again, as noted above, this is due to the names and classifications of individual forms of CAM varying between different surveys in different countries and even within a country. For example, the modality of herbal medicine was not singled out in a recent US survey in 2002, thus creating a difficulty in making comparisons with other studies.[1] Nevertheless, presented in Table 4.17 are the common CAM modalities that were investigated in the current survey, the 1997 and 2002 US surveys,[1,3] the 1998 UK survey,[5] the 1999 Canadian survey[6] and the 2001 Japanese survey.[7]

A high prevalence of the use of herbal medicine, massage therapy and chiropractic was observed in the current survey, the 1997 US survey and the 1999 Canadian survey. A minimum of 11% of the adult population of these countries had used these therapies during a 12-month period. On the other hand, with the exception of the extremely popular use of homeopathy as estimated in the UK in 1998 (8.6%), for most individual forms of CAM, its use among Australians was more prevalent than most other countries.

Existing evidence indicates that the practice of, and training in, acupuncture is common in the US and the UK. For example, it has been estimated that over 10,000 non-physician acupuncturists and nearly 3,000 physicians practised acupuncture in the US in 1998.[150] In addition, according to the Accreditation Commission for Acupuncture and Oriental Medicine, a national accrediting agency recognized by the U.S. Department of Education, there were over 50 schools and colleges of acupuncture with accredited or candidacy status.[151] However, it is surprising to find out that less than 2% of adults from the US and the UK had used acupuncture, whereas nearly 10% of Australians had done so. In all, the biggest distinction between the prevalence of CAM use in Australia and other countries is in the use of acupuncture, aromatherapy and naturopathy.

Table 4.17 Comparison of CAM prevalence with selected overseas CAM surveys

CAM	Prevalence (%)					
	AUS 05*	US 02[1]	US 97[3]	UK 98[5]	CAN 97[5]	JPN 01[7]
Acupuncture	9.2	1.1	1.0	1.6‡	…	6.7
Chiropractic	16.1	7.5	11.0	3.6‡	13.0	7.1‡‡
Massage therapy	28.8**	5.0	11.1	…	12.0	14.8
Osteopathy	4.6	…	…	4.3‡	…	7.1‡‡
Reflexology	4.1	…	…	2.4‡	…	…
Herbal medicine	19.8**	…***	12.1	19.8	12.0	17.2
Homeopathy	6.0	1.7	3.4	8.6	4.0	0.3
Aromatherapy	16.1	…	5.6††	3.5‡	5.0	9.3
Naturopathy	10.7	0.2	0.7††	…	…	…
Any CAM	68.9	62.0†	42.1	28.3	50.0	76.0

AUS: Australia; US: United States; UK: United Kingdom; JPN: Japan; CAN: Canada.
… Indicates prevalence was not provided in that survey
* Refers to the current survey that conducted in 2005
** Prevalence includes different forms of massage therapy or herbal medicine
*** The category of "non-vitamin, non-mineral, natural products" included common herbal medicine, such as Ginseng and Ginkgo biloba. The total prevalence was 18.9%.
† Prevalence included prayer specifically for health reasons.
†† Use of these CAM was not part of the total 42.1% CAM prevalence.
‡ Prevalence was visits to practitioners for named CAM therapy rather than the actual use. Use of each of the CAM therapies was not estimated in any UK study.
‡‡ A combined prevalence of chiropractic and osteopathy was estimated (total, 7.1%)

Anecdotally, aromatherapy and naturopathy are commonly practiced in Australia. Thus, the current survey estimated that nearly one in six Australians had used aromatherapy in the 12 months preceding the survey. The high prevalence was also estimated in an Australian regional study.[11] On the other hand, only approximately 5% of Canadians and Americans reported the use of aromatherapy.[3,5] Surprisingly, in the 1997 US study the use of aromatherapy was not counted toward the total CAM prevalence.[3] Efforts to ensure the CAM modalities were comparable to a previous 1990 study conducted by the same group of researchers seemed to be the main rationale for excluding additional, newly investigated

therapies in 1997.[2,3] Thus, the total estimated CAM prevalence would be higher in the US if the CAM definition included aromatherapy and naturopathy.

It is also of interest to compare the findings arising from the current survey with data for Japan. The prevalence of overall CAM use in Japan is much higher than most countries, including Australia (Table 4.17). It is not surprising that some forms of CAM, including Kampo and acupuncture, are widely accepted in Japan.[7] For example, in addition to the 17.2% adults who used herbs or over-the-counter (OTC) Kampo (Table 4.17), 10% of adults also used ethical Kampo and nearly half (43.1%) of Japanese adults used a dietary supplement. However, the use of other individual forms of CAM was relatively lower in Japan than in Australia. Thus, despite the overwhelming number of licensed acupuncturists in Japan (113,000 in 2001),[152] the total prevalence of using acupuncture and moxibustion in 2001 was only 6.7%, which was lower than the Australian prevalence (9.2%) in 2005.

The findings of the current study provide strong evidence that complementary and alternative medicine forms an integral part of Australia's health care system. The popularity of CAM in Australia is not only evidenced by the high prevalence of common forms of CAM, such as chiropractic and acupuncture. But also by forms of CAM that are not common in other countries, such as aromatherapy and naturopathy. Concerning the efficacy and safety of use, further rigorous research in the CAM field in Australia is necessary and critical.

4.2.2 Characteristics of CAM Users

Most commonly, survey studies on CAM prevalence have also investigated the use of CAM by different socio-demographic groups. Common characteristics related to a higher prevalence of CAM, such as age, educational background, and income range were first reported in a 1990 US study.[2] The current study suggests a higher prevalence of CAM use by females, by the better educated, by those with higher incomes, by those in employment, and by those with private health insurance cover. These findings are generally consistent with reports of similar studies from other countries[1,3] and those of previous Australian studies.[10,11] However, in terms of age difference, the current survey found the highest prevalence was among the youngest adults (18-34 years old), rather than by middle-aged adults. Some findings in regard to the characteristics of users may differ between studies. For example, the gender differential in the use of CAM was not observed in two US studies[2,46] and a recent UK study.[16]

It is of interest to examine the ethnicity of CAM users, as the conclusion drawn from a large population survey suggested that the use of different CAM modalities for treatment versus illness varied across race and ethnicity categories.[153] Although differences in CAM use between Australian residents born in different countries were not explored, or between those in different ethnic groups, the findings indicate that, in general, individuals who were not born in Australia were less likely to visit a CAM practitioner than those born in Australia. This finding was similar to the 2004 South Australian study, which found that Australian-born residents had used CAM more than those born elsewhere.[11]

The difference of CAM use among different ethnic groups was also commonly reported in the US surveys. However, the findings were somewhat contradictory between studies. For example, both of the Harvard surveys[2,3] found the use of CAM was significantly less common

among African Americans (defined as black adults) than among members of other racial groups. However, a more recently published article suggested that black adults were more likely to use CAM overall, when the definition of CAM included prayer specifically for health purposes. The authors further revealed that the high prevalence among black adults was mainly in the use of the mind-body therapies, including prayer, whereas the use of biological-based therapies, such as multivitamins, was less common.[1]

Limited CAM surveys have also explored the association between the use of CAM and users' status of health insurance coverage. Again, commonly, people with private health insurance were more likely to use CAM.[1,4] This finding is not surprising. However, detailed information on what forms of CAM people with private health insurance were more likely to use was limited. The current survey has also confirmed high use among those with private health insurance. In addition, the current survey revealed that the common forms of CAM that participants had used, such as chiropractic, acupuncture and remedial massage were usually covered by private health insurance. Thus, for those who were less commonly covered by private health insurance, for CAM such as aromatherapy, a significant variation of prevalence between people with and without private health insurance was not observed. In this case, aromatherapy used by those without private health insurance was even higher than the use among those with insurance coverage.

In terms of regional differences within countries, the trend is obvious that American people who reside in the West of the country are much more likely to use CAM than residents from other regions.[1-4] In addition, in the UK, a relatively high prevalence was found in the Midlands and East Anglia, while in the North of England it was lower.[16] In Canada, the highest rate was reported in British Columbia and Alberta.[45,48]In Australia, potential regional differences had not been investigated in the past, as each of the previous surveys was

conducted in a single state. Thus, the current survey suggests that there are marked regional differences within Australia. The CAM prevalence on the East coast, including New South Wales, Victoria and Queensland was considerably higher than other states/territories.

Another frequently reported characteristic associated with CAM use is the health status of the participants, either self-rated general health or some specific health conditions. Commonly, people with chronic health conditions are more likely to use CAM.[45] More specifically, people with conditions such as back pain, allergy and fatigue are frequently found to be associated with a high prevalence of CAM use.[3,46] In the current survey, overall CAM prevalence between people with relatively poor health and those in better health was less significant. However, for certain forms of CAM, such as acupuncture, chiropractic and energy healing, people in poor health were more likely to have used these therapies. Unfortunately, detailed health conditions associated with specific forms of CAM use in Australia's general population were not collected in the current survey, nor in any previous surveys in Australia.

In summary, the common characteristics associated with CAM use in Australia are reasonably consistent with the literature in other countries. The current survey better comprehends these general findings in the Australia health context, notably in the regional differences and the status of health insurance and CAM use among adult Australians.

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4.2.3 Economic Considerations of CAM Use

The Australian Government's Department of Health and Ageing estimates that the average number of services provided per patient by medical practitioners in the year ending June 30, 2005 was 5.5.[154] The estimate from the current study is similar, being 5.53 visits over a 12-month period. For an adult population of 15.5 million (with an estimated 80.8% of them visiting medical practitioners), taking the average number of visits to a medical practitioner per annum as 5.5, the total number of consultations by the adult Australian population in a 12-month period can be estimated as 68.9 million. Again, this figure is similar to the current estimate of the total number of visits to CAM practitioners over a 12-month period (69.2 million). The similar number of practitioner visits for conventional medical services and CAM services is all the more surprising considering that generally, most of the cost of CAM practitioner visits would be borne by users, whereas medical practitioner consultations are subsidised by the national health system.

The Australian Institute of Health and Welfare (AIHW) estimated that, between 2003 and 2004, "out-of-pocket" expenditure by Australians on all over-the-counter health care products not subsidised by the national Pharmaceutical Benefits Scheme (PBS) was A$4.05 billion.[155] It is of interest to compare this figure with the current estimate of A$1.86 billion spent by Australians on CAM products in the 12-month period. It appears that the annual national expenditure on CAM products accounts for almost half the expenditure on non-subsidised health care products. With regard to practitioner services, the AIHW estimated that Australians spent over A$1.6 billion on medical services. The current findings indicate that they spend a similar amount (A$1.73 billion) on CAM practitioner visits.

It is of interest to note the CAM expenditure estimated in two South Australia studies.[10,11] One, conducted in 2000, estimated that over A$2.3 billion would had been spent by the all Australians, whereas another, more recent, South Australia study in 2004 estimated that the cost of CAM had decreased to A$1.8 billion. The adverse publicity of the Pan Pharmaceutical crisis in 2003 could have contributed to the decline of the cost, as researchers have mentioned.[11] In contrast, the current survey estimated a much higher CAM cost incurred by Australians, based on the responses from participants nationwide in 2005. It was estimated that the national expenditure on CAM was 4.13 billion per annum. This was higher than that any previous Australian studies. The amount included additional expenditure related to CAM use, such as books and audio-visual materials (A$0.54 billion); this category was not included in any of the previous Australian regional surveys. Whether the current estimation better reflects current utilisation in Australia would need to be confirmed in a future well-designed follow-up study with a consistent research protocol.

It is also worth noting that the mean expenditure on CAM practitioners was relatively low in South Australia and Western Australia, compared to the mean expenditure in New South Wales, Queensland and Victoria and to the national average. Although not statistically significant, the variations were notable. For example, the mean expenditure among South Australian adults was A$80 less than the amount spent by New South Wales adults (A$204.1 and A$285.9, respectively) and about A$60 less than the national average (A$263.6). The average expenditure spent on CAM products in different states was reasonably comparable. As noted, the current survey suggests a lower CAM prevalence in the state of South Australia as well as a lower mean expenditure on CAM in South Australia. The above-noted discrepancy between the estimated national CAM expenditure in the current survey and the extrapolated national expenditure generated from a single state (South Australia) [10,11] requires further consideration.

Internationally, out-of-pocket expenditure on CAM was also estimated in studies conducted in the US, the UK and Canada. The highest expenditure was estimated in the US in 1997, when over $US27 billion was spent by the Americans. Notably, expenditure on herbal products alone amounted to $US5.1 billion, and out-of-pocket expenditure on high-dose vitamins more than tripled from US$0.9 billion in 1990 to US$3.3 billion in 1997.[3] A relatively moderate out-of-pocket expenditure on CAM was estimated in a 1997 Canadian study (3.8 billion Canadian dollars).[6] On the other hand, Ernst and Write estimated a total of £1.6 billion was spent by UK adults in 1999, based on the average cost of a pre-categorised range of estimations.[17] Thomas and her colleagues estimated the CAM cost of six "more established" therapies, and the annual out-of-pocket expenditure was estimated as £450 million in UK.[5] Thus, the estimated CAM expenditure in the UK studies may need to be interpreted with caution, as suggested by the researchers.

In summary, the estimation of CAM expenditure is subject to a number of problems. The potential inaccuracies of recall bias (generally, for a one-year period) are the major concern for the accuracy of extrapolation. Moreover, the greater variation of cost estimations by individual CAM users restricts the precision of extrapolation from a survey population to a national level. As observed in the current survey, a small proportion of participants spent a relatively large amount on CAM, due to their specific chronic health conditions, such as trauma. The estimations made from information provided by such participants do not necessarily violate the accuracy of such cost estimation. However, the extreme values may impact substantially on the overall average. Finally, the totality of the CAM expenditure is also subject to the same weakness of current uncertainty over the definition and classification of CAM modalities in different social contexts among literature.

CHAPTER 5. REGIONAL DIFFERENCES IN CAM USE

As mentioned earlier, regional difference in overall CAM use in Australia may contribute to the relatively high prevalence found in the current study. It is of particular interest to explore the use of specific forms of CAM and investigate the characteristics of CAM users in different states and territories in Australia. The findings and discussions are presented in this Chapter.

5.1 Results

5.1.1 Overview

When interpreting the findings presented in this Chapter, it is important to note the sample of interviews that were conducted in each state and territory. As outlined in Table 3.1, the number of interviews was allocated at a state level based on the recent Australian Bureau of Statistics data. Thus, the final completed interviews were: New South Wales (353), Victoria (264), Queensland (206), South Australia (87), Western Australia (96), other states and territories (61).

Overall, the state of New South Wales had the highest prevalence of CAM use (72.1%), closely followed by Queensland (71.0 %), then Victoria (69.8%), with South Australia having the lowest rate (60.8%). In terms of visiting a CAM practitioner, the highest prevalence was found in Victoria (48.0%), with Queensland (41.4%) and Western Australia (42.0%) having a lower rate. However, these regional differences were not statistically significant (Table 5.1 and Table 5.2).

When examining the use of each of the 17 forms of CAM specifically, the significant regional differentials were identified in several modalities between states. As shown in Table 5.2, a substantially low rate of acupuncture use was reported in Western Australia (2.7%), whereas the rate was at least three times higher in New South Wales (9.9%, $p<0.01$), Victoria (10.9%, $p<0.01$) and Queensland (11.6%, $p<0.01$). Similarly, significantly low rates were also found in the use of osteopathy in South Australia (1.2%) and Western Australia (2.2%), and the use of naturopathy in Queensland (6.2%) and South Australia (5.5%). In contrast, Victorian adults favoured the use of aromatherapy the most (20.9%) – more than double the use in South Australia (10.0%) and 1.5 times higher than the use in New South Wales (13.8%) and Western Australia (13.7%, $p<0.05$).

Anecdotally, some types of CAM practitioners are more popular in some states of Australia than in others. Thus, similar to the findings of the regional differences of CAM use in Australia, as shown in Table 5.2, it is of interest to see that visits to an acupuncturist were much higher in New South Wales (8.3%) and Victoria (10.1%) than in South Australia (3.2%, $p<0.05$) and Western Australia (2.7%, $p<0.01$). Surprisingly, in South Australia, none of the survey participants had visited practitioners for Chinese herbal medicine, Western herbal medicine or Chinese medicine dietary therapy.

Table 5.1 Regional differences of use of 17 forms of CAM

	Percent (standard error) of CAM use								
Regions	Any CAM	Acupuncture	CHM	CTM	CMDT	QGMATC	WHM	WTM	Chiropractic
NSW	72.1 (2.37)	9.9 (1.57)	6.3 (1.29)	4.8 (1.13)	2.2 (0.77)	3.7 (1.00)	16.9 (1.98)	27.1 (2.35)	17.0 (1.98)
VIC	69.8 (2.80)	10.9 (1.90)	8.8 (1.73)	8.3 (1.68)	3.3 (1.09)	7.7 (1.63)*	17.3 (2.31)	27.2 (2.71)	17.4 (2.31)
QLD	71.0 (3.15)	11.6 (2.23)	8.2 (1.91)	3.4 (1.27)	1.7 (0.89)	8.5 (1.94)*	15.0 (2.49)	32.2 (3.25)	14.9 (2.47)
SA	60.8 (5.37)	6.9 (2.78)	5.8 (2.57)	2.3 (1.66)	1.7 (1.41)	5.4 (2.48)	10.1 (3.31)	25.3 (4.78)	17.0 (4.13)
WA	66.6 (4.60)	2.7 (1.58)**	3.6 (1.80)	4.4 (2.00)	2.5 (1.52)	3.0 (1.66)	15.5 (3.53)	20.4 (3.93)	14.4 (3.42)
Regions	Osteopathy	Homeopathy	Naturopathy	Meditation	Aromatherapy	Clinical nutrition	Energy healing	Reflexology	Yoga
NSW	6.0 (1.25)	5.0 (1.16)	11.8 (1.70)	16.7 (1.97)	13.8 (1.82)	47.3 (2.63)	5.6 (1.21)	4.0 (1.04)	12.7 (1.76)
VIC	5.2 (1.36)	8.0 (1.66)	14.7 (2.16)	18.3 (2.36)	20.9 (2.48)*	43.0 (3.02)	9.1 (1.75)	5.3 (1.36)	12.4 (2.01)
QLD	3.8 (1.34)	4.2 (1.40)	6.2 (1.67)*	19.0 (2.73)	16.7 (2.60)	49.9 (3.48)	6.0 (1.66)	4.0 (1.36)	13.0 (2.34)
SA	1.2 (1.18)**	8.9 (3.13)	5.5 (2.52)*	13.0 (3.70)	10.0 (3.30)	43.6 (5.45)	5.3 (2.46)	2.0 (1.55)	8.5 (3.06)
WA	2.2 (1.43)*	6.4 (2.39)	11.4 (3.10)	17.8 (3.72)	13.7 (3.35)	46.8 (4.86)	9.7 (2.89)	3.8 (1.87)	8.6 (2.73)

Note 1: probability of proportion being significantly different from prevalence in first category (NSW) (Z-test, *: $p<0.05$, **: $p<0.01$)

Note 2: NSW: New South Wales, VIC: Victoria, QLD: Queensland, SA: South Australia, WA: Western Australia

Note 3: CHM: Chinese herbal medicine, CTM: Chinese therapeutic massage, CMDT: Chinese medicine dietary therapy, QGMATC: Qigong, martial art and Tai Chi, WHM: Western herbal medicine, WTM: Western therapeutic massage

Table 5.2 Regional differences of visits to practitioners for 17 forms of CAM

	Percent (standard error) of visits to CAM practitioners								
Regions	Any CAM	Acupuncture	CHM	CTM	CMDT	QGMATC	WHM	WTM	Chiropractic
NSW	45.0 (2.63)	8.3 (1.46)	2.4 (0.81)	3.1 (0.92)	0.5 (0.39)	2.2 (0.77)	6.0 (1.25)	21.9 (2.18)	15.0 (1.89)
VIC	48.0 (3.05)	10.1 (1.84)	3.7 (1.14)	5.0 (1.33)	1.2 (0.66)	3.9 (1.18)	6.0 (1.44)	22.0 (2.53)	15.9 (2.23)
QLD	41.4 (3.43)	7.7 (1.85)	2.0 (0.96)	2.3 (1.04)	0.4 (0.42)	5.3 (1.56)	2.1 (1.00)*	19.3 (2.75)	12.8 (2.32)
SA	44.5 (5.46)	3.2 (1.93)*	0.0 (0.00)**	2.3 (1.66)	0.0 (0.00)	1.7 (1.41)	0.0 (0.00)**	19.6 (4.37)	16.1 (4.04)
WA	42.0 (4.81)	2.7 (1.58)**	1.1 (1.03)	1.3 (1.12)	0.0 (0.00)	0.8 (0.89)	6.7 (2.44)	12.6 (3.23)*	14.4 (3.42)
Regions	Osteopathy	Homeopathy	Naturopathy	Meditation	Aromatherapy	Clinical nutrition	Energy healing	Reflexology	Yoga
NSW	4.9 (1.14)	3.0 (0.90)	7.2 (1.36)	3.6 (0.98)	2.9 (0.88)	9.2 (1.53)	4.0 (1.04)	1.5 (0.65)	5.8 (1.23)
VIC	4.3 (1.24)	3.9 (1.18)	8.7 (1.72)	3.8 (1.16)	4.5 (1.26)	7.8 (1.63)	3.1 (1.05)	3.4 (1.11)	8.8 (1.73)
QLD	2.2 (1.02)	1.5 (0.86)	2.3 (1.04)**	5.9 (1.64)	1.2 (0.76)	5.2 (1.55)	1.5 (0.86)	1.6 (0.87)	7.3 (1.81)
SA	1.2 (1.18)*	4.9 (2.37)	1.3 (1.25)**	4.4 (2.25)	2.8 (1.82)	6.6 (2.73)	4.2 (2.19)	0.8 (1.01)	5.1 (2.42)
WA	1.1 (1.00)*	1.3 (1.12)	6.8 (2.46)	4.0 (1.90)	4.0 (1.91)	6.6 (2.42)	4.2 (1.96)	2.5 (1.52)	4.4 (2.00)

Note 1: probability of proportion being significantly different from prevalence in first category (NSW) (Z-test, *: $p<0.05$, **: $p<0.01$)

Note 2: NSW: New South Wales, VIC: Victoria, QLD: Queensland, SA: South Australia, WA: Western Australia

Note 3: CHM: Chinese herbal medicine, CTM: Chinese therapeutic massage, CMDT: Chinese medicine dietary therapy, QGMATC: Qigong, martial art and Tai Chi, WHM: Western herbal medicine, WTM: Western therapeutic massage

5.1.2 Profile of CAM Users in New South Wales

More people live in New South Wales (NSW) than any other state or territory of Australia. As noted above, the proportions of CAM users and people visits to CAM practitioners in New South Wales were considerably higher than most other states/territories. A sub-group analysis on socio-demographic characteristics that related to CAM users and people visits to CAM practitioners in New South Wales is summarised in Table 5.3. It is worth noting that when conducting sub-group analyses in all states and territories, the sample sizes become smaller and, consequently, the statistical power of the test to detect differences in each region is reduced. Thus, statistically significant differences are less likely to be observed at a state level.

In New South Wales, those participants who considered their health as poor or fair were more likely to use CAM (82.8%) than those in better health (70.1%, $p<0.05$). Such a difference, however, was not observed in the national prevalence. In addition, New South Wales appeared to be the only state in which such a difference was found. A few national significant findings of people visits to CAM practitioners are also observed in New South Wales, such as a higher prevalence among those with a post-secondary education, who have private health insurance, and those with relatively higher income ranges (Table 5.3).

Table 5.3 Socio-demographic characteristics of CAM users in New South Wales

Characteristics*	Users		Visited practitioners	
	% (95% CI)	p†	% (95% CI)	p†
Gender				
Female	74.6 (68.2 – 80.9)		46.0 (38.8 – 53.2)	
Male	69.5 (62.7 – 76.3)	>0.05	44.1 (36.8 – 51.4)	>0.05
Age (year)				
18-34	75.5 (67.5 – 83.4)		45.1 (35.8 – 54.3)	
35-64	72.2 (65.7 – 78.7)	>0.05	46.2 (38.9 – 53.4)	>0.05
65+	66.9 (55.4 – 78.5)	>0.05	42.5 (30.4 – 54.6)	>0.05
Country of Birth				
Australia	72.2 (66.9 – 77.6)		46.9 (41.0 – 52.8)	
Non-Australia	71.5 (61.9 – 81.2)	>0.05	40.6 (30.1 – 51.1)	>0.05
Self-reported health status				
Excellent/very good/good	70.1 (65.0 – 75.3)		43.4 (37.8 – 48.9)	
Fair/poor	82.8 (72.8 – 92.8)	<0.05	54.3 (41.1 – 67.5)	>0.05
Post-secondary education				
No	68.7 (60.8 – 76.7)		33.5 (25.5 – 41.6)	
Yes	74.2 (68.4 – 79.9)	>0.05	52.1 (45.6 – 58.6)	<0.01
Employment				
Employed	74.3 (68.7 – 79.8)		47.2 (40.8 – 53.5)	
Unemployed or not in labour force	68.4 (59.9 – 76.8)	>0.05	41.9 (32.9 – 50.8)	>0.05
Private health insurance				
Yes	74.8 (68.6 – 80.9)		51.0 (43.9 – 58.0)	
No	69.3 (62.1 – 76.4)	>0.05	39.5 (31.9 – 47.1)	<0.05
Annual household income				
<A$20,000	55.7 (42.2 – 69.3)		33.7 (20.8 – 46.7)	
A$20,000-A$40,000	73.5 (62.0 – 85.1)	>0.05	53.1 (40.1 – 66.2)	<0.05
>A$40,000	73.3 (67.1 – 79.5)	<0.05	44.6 (37.7 – 51.6)	>0.05

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

5.1.3 Profile of CAM Users in Victoria

The state of Victoria (VIC) is considered the pioneer in CAM practitioner regulation in Australia and indeed in Western countries. For example, it is currently the only state in Australia that has introduced mandatory registration of Chinese medicine practitioners. Thus, the use of acupuncture and Chinese herbal medicine (Table 5.1) and, visiting practitioners of acupuncture and Chinese herbal medicine have been found to be more prevalent in this state (Table 5.2).

Summarised in Table 5.4 is a sub-group analysis of socio-demographic characteristics that relate to CAM users and people visits to CAM practitioners in Victoria. The income characteristics relating to both CAM users and people visits to CAM practitioners in Victoria were most similar to the national figures. That is, the group of people with higher household incomes (i.e. more than $40,000/pa) had a much higher prevalence of CAM use (79.5%) and visits to CAM practitioners (59.3%) than low-income participants (i.e. less than $20,000/pa) (55.2% and 34.4% respectively, $p<0.01$). Again, similar to the overall national prevalence, the high prevalence of visits to CAM practitioners is also significantly higher for those born in Australia and among younger adults (both, $p<0.05$).

Table 5.4 Socio-demographic characteristics of CAM users in Victoria

Characteristics*	Users		Visited practitioners	
	% (95% CI)	p†	% (95% CI)	p†
Gender				
Female	74.2 (66.9 – 81.5)		53.6 (45.3 – 62.0)	
Male	65.1 (57.0 – 73.3)	>0.05	42.1 (33.7 – 50.6)	>0.05
Age (year)				
18-34	78.3 (69.5 – 87.1)		57.9 (47.4 – 68.5)	
35-64	68.7 (60.9 – 76.5)	>0.05	46.5 (38.1 – 54.9)	>0.05
65+	58.4 (44.3 – 72.5)	<0.05	36.8 (23.0 – 50.6)	<0.05
Country of Birth				
Australia	71.7 (65.5 – 77.9)		52.2 (45.2 – 59.1)	
Non-Australia	63.7 (52.3 – 75.2)	>0.05	36.4 (25.0 – 47.8)	<0.05
Self-reported health status				
Excellent/very good/good	70.6 (64.7 – 76.5)		48.2 (41.8 – 54.7)	
Fair/poor	65.1 (50.1 – 80.0)	>0.05	46.9 (31.2 – 62.5)	>0.05
Post-secondary education				
No	61.9 (52.9 – 71.0)		41.7 (32.5 – 50.9)	
Yes	75.2 (68.5 – 81.9)	<0.05	52.4 (44.6 – 60.1)	>0.05
Employment				
Employed	73.0 (66.2 – 79.7)		49.5 (41.9 – 57.2)	
Unemployed or not in labour force	63.4 (54.0 – 72.8)	>0.05	43.6 (33.9 – 53.2)	>0.05
Private health insurance				
Yes	71.5 (64.0 – 78.9)		49.6 (41.3 – 57.8)	
No	67.7 (59.5 – 75.8)	>0.05	45.9 (37.2 – 54.7)	>0.05
Annual household income				
<A$20,000	55.2 (40.6 – 69.7)		34.4 (20.5 – 48.2)	
A$20,000-A$40,000	64.8 (52.2 – 77.4)	>0.05	43.7 (30.7 – 56.8)	>0.05
>A$40,000	79.5 (72.6 – 86.4)	<0.01	59.3 (50.9 – 67.6)	<0.01

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

5.1.4 Profile of CAM Users in Queensland

Surprisingly, although the prevalence of CAM use in Queensland (QLD) was considerably high, the prevalence of visits to CAM practitioners, however, was the lowest (41.4%). This raises a safety concern that a relatively large proportion (41.8%) of CAM users in Queensland self-administered CAM products and therapies, compared with a relatively lower proportion in other states (between 26.7% to 37.5%). After investigating this proportion in the use of each of the 17 forms of CAM and visits to CAM practitioners, the larger proportions of Queensland adults who self-administered Chinese herbal medicine (76.1%) and Western herbal medicine (85.8%) may partially explain the current findings (Table 5.1 and Table 5.2).

The previously mentioned large gender differential in the prevalence of CAM and visits to CAM practitioners in Australia nationwide was found to be statistically significant only in Queensland (Table 5.5) (female users vs. male users, $p<0.01$). Female adults in Queensland tended to be more likely to use CAM (82.0%) than male adults (59.9%). Interestingly, such a gender difference in CAM use was not observed in any of the other states. Furthermore, the proportion of CAM users among the group of Queensland young adult (82.1%) was higher than in any other state. Also, there was least variation (67.6%, 74.5% and 75.5%, respectively) in CAM use among different income earners who resided in Queensland.

Table 5.5 Socio-demographic characteristics of CAM users in Queensland

Characteristics*	Users		Visited practitioners	
	% (95% CI)	p†	% (95% CI)	p†
Gender				
Female	82.0 (74.6 – 89.3)		52.1 (42.5 – 61.6)	
Male	59.9 (50.5 – 69.4)	<0.01	30.5 (21.5 – 39.4)	<0.01
Age (year)				
18-34	82.1 (72.9 – 91.4)		48.7 (36.6 – 60.8)	
35-64	67.7 (58.8 – 76.5)	<0.05	40.2 (30.9 – 49.5)	>0.05
65+	60.0 (43.4 – 76.7)	<0.05	30.5 (14.8 – 46.1)	>0.05
Country of Birth				
Australia	73.5 (66.8 – 80.2)		42.4 (34.9 – 49.9)	
Non-Australia	62.6 (47.5 – 77.8)	>0.05	38.0 (22.8 – 53.2)	>0.05
Self-reported health status				
Excellent/very good/good	71.4 (64.6 – 78.1)		40.4 (33.1 – 47.7)	
Fair/poor	68.5 (52.5 – 84.4)	>0.05	44.4 (27.4 – 61.4)	>0.05
Post-secondary education				
No	63.6 (54.4 – 72.7)		34.6 (25.6 – 43.7)	
Yes	80.2 (72.3 – 88.2)	<0.01	49.6 (39.6 – 59.5)	<0.05
Employment				
Employed	74.2 (66.9 – 81.5)		43.2 (34.9 – 51.4)	
Unemployed or not in labour force	67.5 (56.1 – 78.9)	>0.05	39.4 (27.5 – 51.2)	>0.05
Private health insurance				
Yes	75.6 (67.4 – 83.8)		46.5 (36.9 – 56.1)	
No	66.4 (57.2 – 75.6)	>0.05	36.1 (26.8 – 45.4)	>0.05
Annual household income				
<A$20,000	74.5 (58.6 – 90.5)		28.7 (12.1 – 45.2)	
A$20,000-A$40,000	67.6 (54.0 – 81.1)	>0.05	33.1 (19.5 – 46.7)	>0.05
>A$40,000	75.5 (67.5 – 83.4)	>0.05	51.8 (42.6 – 61.1)	<0.05

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

5.1.5 Profile of CAM Users in South Australia

Overall CAM use in South Australia (SA) was considered to be the lowest in the current study (excluding Australian Capital Territory, Northern Territory and Tasmania), although this was not the case when considering visits to CAM practitioners rather than CAM use (Table 5.1 and Table 5.2). Surprisingly, a high prevalence of both homeopathy users and visits to homeopaths was observed in South Australia. The proportions of these (8.9% and 4.9%, respectively) were double those proportions in Queensland (4.2% of use and 1.5% of practitioner visits respectively). Moreover, although the use of energy healing in South Australia was the lowest (5.3%), the prevalence of visits to energy healing practitioners in South Australia, however, was the highest (4.2%).

In contrast, apart from the previously mentioned low rate of use of acupuncture, Chinese herbal medicine, Chinese therapeutic massage and Western herbal medicine in South Australia, the lowest rates of naturopathy use (5.5%) and visits to naturopaths were also found in South Australia (1.3%), being about three times less than any other state except Queensland ($p<0.05$).

Less significant findings were found in the characteristics of CAM users in South Australia. In regard to visits to CAM practitioners, the largest variability in participant characteristics was private health insurance and household incomes. The variations were considerably higher than for any other state of Australia. For example, South Australian adults with private health insurance were two times more likely to visit a CAM practitioner than those South Australians without private health insurance (52.0% vs. 20.5%, $p<0.01$, Table 5.6). Finally, in contrast to the considerably higher prevalence of CAM use among females in other states (generally more than 70%), the lowest rate of CAM use by females was in South Australia (62.5%).

Table 5.6 Socio-demographic characteristics of CAM users in South Australia

Characteristics*	Users		Visited practitioners	
	% (95% CI)	p†	% (95% CI)	p†
Gender				
Female	62.5 (47.9 – 77.1)		43.9 (29.0 – 58.9)	
Male	59.0 (43.9 – 74.2)	>0.05	45.2 (29.9 – 60.5)	>0.05
Age (year)				
18-34	66.9 (48.0 – 85.8)		45.2 (25.2 – 65.2)	
35-64	62.5 (48.0 – 77.0)	>0.05	49.7 (34.7 – 64.7)	>0.05
65+	47.4 (23.1 – 71.7)	>0.05	30.2 (7.8 – 52.5)	>0.05
Country of Birth				
Australia	60.1 (48.0 – 72.3)		44.0 (31.7 – 56.3)	
Non-Australia	58.7 (36.1 – 81.4)	>0.05	40.4 (17.8 – 62.9)	>0.05
Self-reported health status				
Excellent/very good/good	60.3 (48.7 – 71.9)		44.4 (32.6 – 56.2)	
Fair/poor	63.3 (38.4 – 88.1)	>0.05	45.3 (19.6 – 71.0)	>0.05
Post-secondary education				
No	54.3 (39.5 – 69.1)		38.0 (23.5 – 52.4)	
Yes	68.0 (53.4 – 82.5)	>0.05	51.8 (36.2 – 67.4)	>0.05
Employment				
Employed	66.9 (53.7 – 80.1)		48.4 (34.4 – 62.5)	
Unemployed or not in labour force	52.1 (35.4 – 68.8)	>0.05	39.0 (22.7 – 55.4)	>0.05
Private health insurance				
Yes	63.0 (51.0 – 74.9)		52.0 (39.7 – 64.4)	
No	53.9 (31.9 – 75.9)	>0.05	20.5 (2.7 – 38.4)	<0.01
Annual household income				
<A$20,000	57.5 (25.1 – 89.8)		15.6 #	
A$20,000-A$40,000	59.1 (36.5 – 81.7)	>0.05	51.3 (28.4 – 74.3)	<0.05
>A$40,000	61.2 (46.5 – 76.0)	>0.05	46.1 (31.0 – 61.2)	<0.05

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

\# Too few responses to calculate the CI

5.1.6 Profile of CAM Users in Western Australia

In contrast to the less significant findings among CAM users in South Australia, CAM users in Western Australia appeared to have a higher correlation with their socio-demographic characteristics. Most significantly, Western Australia has the highest CAM prevalence (83.2%) among people with post-secondary education than any other state. In addition, when comparing those with post-secondary education and those without such education, Western Australia is the only state in which significant differences were observed both in CAM users and in people visits to CAM practitioners ($p<0.01$ for CAM users and $p<0.05$ for people visits to CAM practitioners). Also, Western Australia is the only state in which statistically significant differences were observed in both the prevalence of CAM use and visits to CAM practitioners ($p<0.01$), with respect to users' private health insurance coverage status (Table 5.7). In Western Australia, a large variation was also found in the country of birth of people visits to CAM practitioners, that is, people born in Australia were more likely to visit CAM practitioners (51.1%) than those born overseas (21.3%, $p<0.01$). This finding is similar to CAM users in Victoria.

Table 5.7 Socio-demographic characteristics of CAM users in Western Australia

Characteristics*	Users		Visited practitioners	
	% (95% CI)	p†	% (95% CI)	p†
Gender				
Female	74.2 (62.4 – 86.0)		51.0 (37.5 – 64.5)	
Male	58.9 (45.6 – 72.2)	>0.05	33.0 (20.3 – 45.7)	>0.05
Age (year)				
18-34	70.2 (54.7 – 85.7)		38.9 (22.4 – 55.4)	
35-64	69.6 (57.5 – 81.7)	>0.05	49.0 (35.8 – 62.1)	>0.05
65+	48.9 (24.7 – 73.1)	>0.05	25.0 (4.1 – 45.9)	>0.05
Country of Birth				
Australia	70.0 (59.5 – 80.5)		51.1 (39.7 – 62.6)	
Non-Australia	58.8 (41.8 – 75.8)	>0.05	21.3 (7.1 – 35.5)	<0.01
Self-reported health status				
Excellent/very good/good	66.4 (56.7 – 76.1)		42.8 (32.6 – 53.0)	
Fair/poor	67.8 (43.5 – 92.1)	>0.05	37.1 (12.0 – 62.3)	>0.05
Post-secondary education				
No	46.8 (32.7 – 60.9)		29.6 (16.7 – 42.5)	
Yes	83.2 (73.6 – 92.9)	<0.01	52.5 (39.6 – 65.5)	<0.05
Employment				
Employed	71.4 (61.1 – 81.7)		45.7 (34.3 – 57.1)	
Unemployed or not in labour force	56.0 (38.1 – 73.8)	>0.05	32.5 (15.6 – 49.3)	>0.05
Private health insurance				
Yes	75.6 (65.3 – 85.8)		51.1 (39.2 – 63.0)	
No	50.4 (34.5 – 66.4)	<0.01	25.7 (11.8 – 39.7)	<0.01
Annual household income				
<A$20,000	74.1 (52.6 – 95.7)		35.9 (12.3 – 59.5)	
A$20,000-A$40,000	51.9 (31.1 – 72.7)	>0.05	34.7 (14.9 – 54.5)	>0.05
>A$40,000	66.7 (54.6 – 78.9)	>0.05	41.1 (28.4 – 53.8)	>0.05

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

5.1.7 Profile of CAM Users in Other States/Territories

Apart from the five major states discussed above, data on CAM and visits to CAM practitioners were also collected from the state of Tasmania (TAS), the Northern Territory (NT) and the Australian Capital Territory (ACT). Sixty-one interviews were conducted in these regions (26 each in Tasmania and in the Australian Capital Territory, and nine in the Northern Territory). Thus, combined results were presented. It is important to note that when examining the prevalence of specific use between different characteristics, the sample size is too small to calculate a 95% confidence interval in several items (Table 5.8).

In general, approximately half (49.6%, 95%CI: 34.8% to 64.4%) of the adult populations of the above three regions combined, were CAM users, while less than one in three (29.4%, 95%CI: 15.9% to 42.9%) adults had visited CAM practitioners. Specifically, CAM use was higher in Northern Territory, being about 71.1% (95%CI: 34.0% to 108.1%), with 38.3% (95%CI: -1.4% to 78.1%) visiting CAM practitioners.

The prevalence of CAM use in Tasmania was lower than the national average – about 52.3% (95%CI: 32.1% to 72.5%), with 29.7% (95%CI: 11.2 % to 48.2%) visiting CAM practitioners. Lastly, in Australian Capital Territory the prevalence of CAM use was about 36.9% (95%CI: 12.3% to 61.6%), with 25.5% (95%CI: 3.2% to 47.8%) visiting CAM practitioners. Again, as noted in the Methodology section, the total number of interviews in these states/territories is not adequate to determine conclusive prevalence of CAM use.

Table 5.8 Socio-demographic characteristics of CAM users in other states/territories

Characteristics*	Users		Visited practitioners	
	% (95% CI)	p†	% (95% CI)	p†
Gender				
Female	60.4 (38.5 – 82.3)		39.0 (17.2 – 60.9)	
Male	41.3 (21.9 – 60.7)	>0.05	22.0 (5.7 – 38.3)	>0.05
Age (year)				
18-34	50.4 (24.1 – 76.6)		38.3 (12.7 – 63.8)	
35-64	62.7 (42.8 – 82.6)	>0.05	31.0 (11.9 – 50.0)	>0.05
65+	8.1 (-11.6 – 27.8)	<0.05	8.1#	>0.05
Country of Birth				
Australia	49.0 (32.7 – 65.4)		26.9 (12.4 – 41.4)	
Non-Australia	57.8 (21.7 – 94.0)	>0.05	45.2 (8.8 – 81.6)	>0.05
Self-reported health status				
Excellent/very good/good	48.1 (32.1 – 64.0)		31.5 (16.7 – 46.4)	
Fair/poor	59.2 (20.2 – 98.1)	>0.05	16.4#	>0.05
Post-secondary education				
No	52 (27.1 – 76.9)		30.2 (7.3 – 53.1)	
Yes	49.7 (31 – 68.3)	>0.05	29.8 (12.8 – 46.9)	>0.05
Employment				
Employed	59.0 (40.1 – 78.0)		32.5 (14.4 – 50.5)	
Unemployed or not in labour force	37.7 (14.8 – 60.6)	>0.05	26.2 (5.4 – 46.9)	>0.05
Private health insurance				
Yes	55.1 (35.1 – 75.1)		34.0 (15.0 – 53.0)	
No	43.1 (21.5 – 64.8)	>0.05	24.0 (5.4 – 42.7)	>0.05
Annual household income				
<A$20,000	42.3 (10.1 – 74.4)		0#	
A$20,000-A$40,000	50.4 (12.2 – 88.6)	>0.05	31.5#	>0.05
>A$40,000	53.3 (32.8 – 73.7)	>0.05	38.1 (18.2 – 58.0)	<0.01

Note: significance levels were adjusted to allow for multiple comparisons

* Excludes subjects who did not provide socio-demographic characteristics

† Probability of proportion being significantly different from the first value in each demographic category (Z-test)

\# Too few responses to calculate the CI

5.1.8 Geographical Summary of CAM Use in Australia

The prevalence of CAM use and visits to CAM practitioners in states and territories of Australia can be geographically summarised in the map below (Figure 5.1).

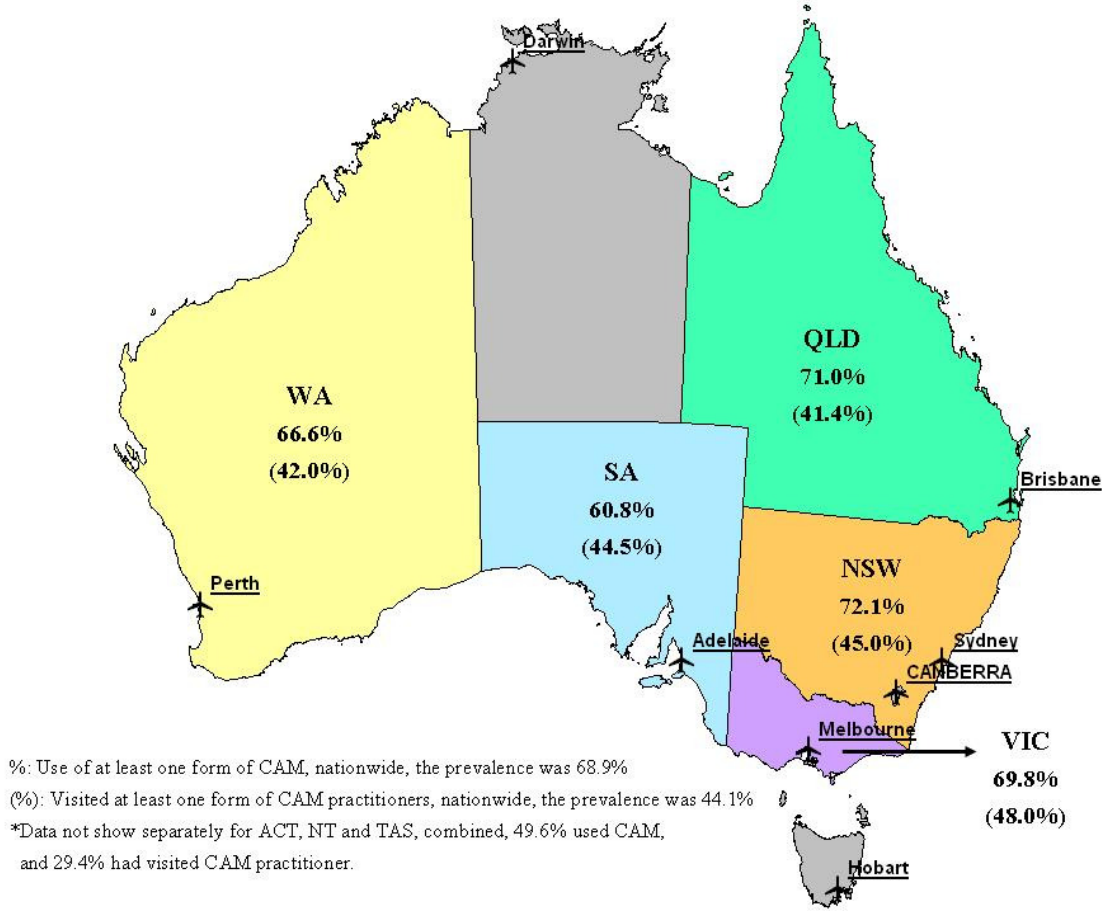


Figure 5.1 Prevalence of CAM use in Australia presented in a map

5.2 Discussion

Anecdotally, the practice of some forms of CAM, such as acupuncture and herbal medicine, are more common in a number of states in Australia. To a certain degree, the suggestions that people who live in New South Wales and Victoria are more likely to use CAM and visit CAM practitioners than any other states, has been confirmed in the present study. Thus, this study observed that South Australia has a much lower usage of CAM, compared to other states in Australia. Logically, the proportion (60.8%) of South Australian residents who used CAM seems consistent with previous estimations.[11] In addition, the proportion (72.1%) of New South Wales adults who used CAM is also consistent with previous New South Wales estimations.[37,38]

As noted in Table 5.1 and Table 5.2, regional differences in the use of certain forms of CAM are also in accord with the existing literature. For example, a previous workforce survey identified a relatively small number of Western herbal medicine and naturopathy practitioners in South Australia, compared to New South Wales, Victoria, Queensland and Western Australia.[12] Consistently, based on the current survey, the lowest prevalence of both Western herbal medicine use and naturopathy use were estimated in South Australia.

Homeopathy is the only CAM modality for which the highest prevalence was observed in South Australia. A detailed rationale for the high usage is not clear. However, incidentally, there is a view that the high use of homeopathy in South Australia actually relates to the history of Germany immigration to that state. The lowest prevalence of homeopathy use was reported in Queensland. However, this seems to be in contrast with the general trend observed in the current survey that Queensland residents favoured the use of most forms of CAM. So there is an aspect of interpreting intra-Australian differences which requires further work

around the social, cultural and historical developments in different states (just as these factors influence differences across countries).

At the time of conducting the survey, Victoria was still the sole Australian state in which acupuncturists and Chinese herbal medicine practitioners were subject to statutory registration. Thus, it is not surprising to see that the prevalence of acupuncture and Chinese herbal medicine use in Victoria was amongst the highest. In particular, the proportion of Victorian residents who had visited acupuncturists was three to four times higher than in South Australia and Western Australia. This implied that statutory registration could impact greatly on the public's confidence in using Chinese medicine, thus impacting on the proportion of residents from this region seeking Chinese medicine care. The general opinion of the impact on public confidence in Chinese medicine practitioner mandatory registration was also sought, and is presented in 7.1.5.2.

In Western Australia the prevalence of each individual form of CAM was generally lower than those for other states. However, the proportion of Western Australia adults who used energy healing such as reiki, and the proportion of Western Australia adults who had visited practitioners for energy healing were the highest among all states. In addition, the proportion of Western Australia adults who used meditation was higher than the prevalence in New South Wales and South Australia, but similar to the prevalence in Victoria and Queensland.

A large regional variation of CAM use was found in the prevalence of aromatherapy. The extraordinarily high prevalence in Victoria may indicate a greater aromatherapy market there than any other states. In all, there is evidence to conclude that there are regional differences in the use of certain forms of CAM in Australia. However, factors that may contribute to such differences cannot be answered by the current survey.

CHAPTER 6. USE OF FOUR SPECIFIC FORMS OF CAM: ACUPUNCTURE, CHINESE HERBAL MEDICINE, CHIROPRACTIC AND OSTEOPATHY

As part of the study, specific questions were designed to investigate the usage and related issues on four specific forms of CAM. These are acupuncture, Chinese herbal medicine, chiropractic and osteopathy. The methodology has been described in Chapter 3.3. This Chapter provides results on these therapies and discusses implications of the findings.

6.1 Results

6.1.1 Chinese Medicine (Acupuncture and Chinese Herbal Medicine)

6.1.1.1 Overview

In this section, data on overall Chinese medicine utilisation and detailed information on specific forms of Chinese medicine, for example, acupuncture and Chinese herbal medicine are presented. The definition of Chinese medicine user (CM user) refers to a person who uses any one of the five major forms of Chinese medicine: acupuncture (ACU), Chinese herbal medicine (CHM), Chinese therapeutic massage (CTM), Chinese medicine dietary therapy (CMDT), and Qigong, martial art and Tai Chi (QGMATC). This definition also applies to those who had visited any one of the five types of Chinese medicine practitioners.

Additional details on acupuncture and Chinese herbal medicine in relation to economic consideration, the rationale for use and the perceived and actual benefits and adverse events are also presented in this Chapter. Results on regulation and health insurance related to Chinese medicine are presented in relevant sections of Chapter 7.

6.1.1.2 Total and Specific Prevalence of Chinese Medicine Use

Overall, a total of 210 participants (weighted percentage, 19.3%, 95%CI: 16.9% – 21.7%) reported using Chinese medicine (CM) in the 12-month preceding the survey. As expected, the most common CM modality was acupuncture (9.2%, 95%CI: 7.5% – 10.9%). The use of other CM modalities were: Chinese herbal medicine (7.0%, 95%CI: 5.5% – 8.5%), Chinese therapeutic massage (5.1%, 95%CI: 3.8% – 6.4%), Chinese medicine dietary therapy (2.3%, 95%CI: 1.4% – 3.2%) and Qigong, martial art and Tai Chi (6.0%, 95%CI: 4.6% – 7.4%). There were two participants (both female from Australia and from New Zealand) who had used all these five forms of CM. A total of 16 participants (7.6% of all CM users) had used all three major forms of CM (i.e. Acupuncture, Chinese herbal medicine and Chinese herbal medicine). Among those who had used Chinese medicine dietary therapy, five out of 28 (17.9%) had used Chinese medicine dietary therapy only but had not used other forms of CM (see Table 4.4).

A total of 131 participants (11.9%, 95%CI: 10.0% to 13.9%) had visited at least one type of CM practitioner. Most acupuncture users (81.1%) had visited an acupuncturist, while the majority (75.2%) of Chinese medicine dietary therapy users did not visit a practitioner for the therapy. Among all survey participants, a total of 7.5% (95%CI: 5.9% to 9.0%) had visited an acupuncturist, while the prevalence of visits to CHM, Chinese therapeutic massage, Chinese medicine dietary therapy and Qigong, martial art and Tai Chi practitioners was 2.3% (95%CI: 1.4% – 3.2%), 3.2% (95%CI: 2.1% – 4.3%), 3.2% (95%CI: 2.1% – 4.2%) and 0.6% (95%CI: 0.1% – 1.0%), respectively (see Table 4.8).

For both prevalence of CM use and visits to CM practitioners, there were some large differences between states (Table 6.1 and Figure 6.1). The lowest prevalence was always observed in Western Australia (Table 6.1), whereas New South Wales, Queensland and Victoria appeared to have a greater prevalence of CM use and visits to CM practitioners. It is worth-noting that although 17.2% of South Australia adults had used CM, only 6.5% had visited CM practitioners. Specifically, these significant differences in visiting CM practitioners were also found in visits to both acupuncturists and Chinese herbal medicine practitioners ($p<0.05$, see Table 5.1 and Table 5.2).

Table 6.1 Regional differences of Chinese medicine use and visits to Chinese medicine practitioners

States	Used Chinese medicine in past 12 months		Statistical difference	
	Yes (%)	No (%)	Chi Square	p-value
New South Wales	17.1	82.9	13.276	0.010
Victoria	22.7	77.3		
Queensland	25.1	74.9		
South Australia	17.2	82.8		
Western Australia	10.3	89.7		
States	**Visited Chinese medicine practitioners in past 12 months**		**Statistical difference**	
	Yes (%)	**No (%)**	**Chi Square**	**p-value**
New South Wales	11.7	88.3	9.245	0.055
Victoria	15.4	84.6		
Queensland	13.5	86.5		
South Australia	6.5	93.5		
Western Australia	6.0	94.0		

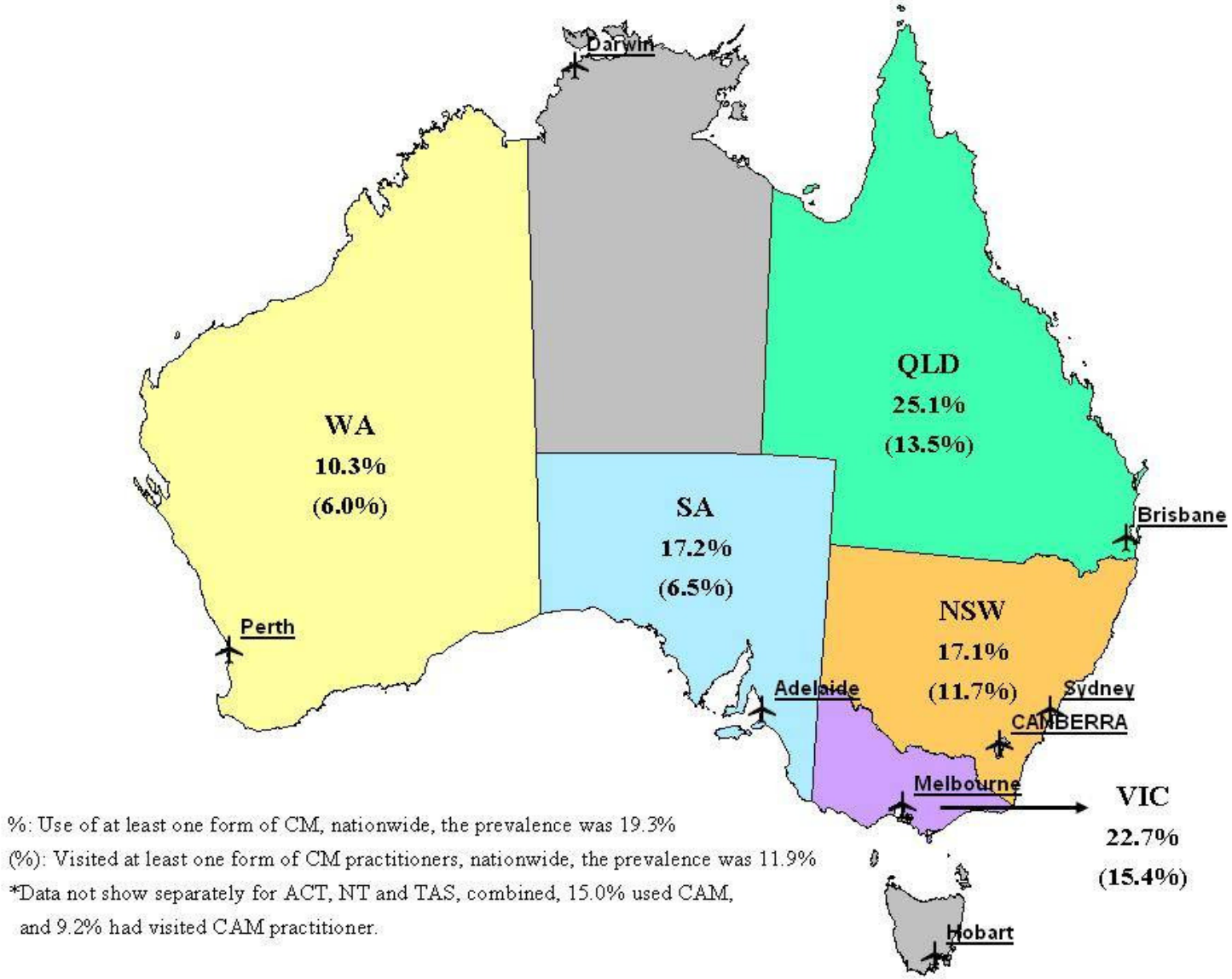


Figure 6.1 Prevalence of Chinese medicine use in Australia presented in a map

6.1.1.3 Frequency of Practitioner Visits and Expenditure

As noted in Table 4.9, the most frequently visited CAM practitioners were acupuncturists, with more than one visit every six weeks (8.75 visits per annum). Together with Chinese herbal medicine (CHM, 5.98 visits per annum) and Chinese therapeutic massage (5.43 visits per annum), a total of 105 people (9.5% of total survey participants) had visited practitioners for any one of three forms of Chinese medicine. This can be transformed into a total of 14.94 million visits for the adult Australian population (10.16 million, 2.12 million and 2.66 million for acupuncturists, CHM practitioners and Chinese therapeutic massage practitioners, respectively).

The average out-of-pocket expenditure of visiting a CAM practitioner, as estimated in the current survey was A$25 (see Chapter 4.1.7.1). When extrapolating this to the estimated national visits to Chinese medicine practitioners, it suggests that a total of A$373.5 million was paid out-of-pocket to Chinese medicine practitioners per annum. Of this, A$254 million was spent on visiting acupuncturists, A$53 million was spent on visiting CHM practitioners and, the remaining A$66.5 million was on Chinese therapeutic massage therapists.

Apart from the costs related to practitioner consultation and treatment, both acupuncture and CHM users had also estimated additional costs related to their treatment. And for CHM, users had separated the costs of herbal medicine and/or other items related to CHM, such as books or equipment. A total of 17 acupuncture users spent additional costs related to acupuncture. The estimated cost from one user is considered as outlier ($6,000), applying the same protocol in calculating CAM costs (see Chapter 4.1.7.1), thus, among those had spent additional costs related to acupuncture, the adjusted median cost was A$88.14. Nationwide, this equals to A$21.80 million acupuncture-related costs.

Of the total CHM users who had spent additional costs to the actual Chinese herbal medicine (71 users, or 6.4% of total participants) and CHM-related products (22 users, or 2.2% of total participants), the median cost was A$100 and A$60, respectively, excluding extreme values (A$4,500 or above, two were herbs and two were CHM-related items). Thus, the national expenditure can be estimated as A$103.11 million for Chinese herbs and A$21.83 million for CHM related costs (see Appendix G9 for the original cost and G10 for a summary statistics of the adjusted data).

6.1.1.4 Acupuncture Treatment Provided by Medical Doctors

Given that there is evidence that a considerable proportion of registered medical doctors (GPs) is providing acupuncture treatment to their patients, acupuncture users were asked whether at least one of the practitioners they visited for acupuncture treatments was a medical doctor, such as a GP or a medical specialist. Of the 82 participants who had visited a practitioner for acupuncture treatment, well over one quarter (29.1%) had received acupuncture treatment from their GPs. Of these, over half (59.1%) had received acupuncture from their GPs only but not from non-GP acupuncturists.

In terms of the frequency of visits to acupuncture practitioners, either to GPs or to traditional acupuncturists, participants provided estimations for the 12-month preceding the survey. Of the total of 24 adults who had received acupuncture from their GPs, a total of 9.3 visits were estimated for the 12-month period, with a median of 4.0 visits per year (two participants mentioned they visited their GPs once a week for a spinal injury and arthritis). On the other hand, 67 participants had received acupuncture treatment from non-GP acupuncturists, including nine persons who had received treatment from both GPs and non-GP providers. Among these (67 participants), the average number of visits during the 12-month period was 7.44, and the median was 4.0. The two highest number of visits were 60 and 45, which were estimated by a patient with broken spine and by another patient with chronic fatigue syndrome.

When combining all visits to GPs and non-GP acupuncturists (considered as visiting a practitioner for acupuncture), the mean number of visits per year was 8.75, with a median of 4.0. The mean number of visits was used to estimate the national total number of visits for acupuncture treatment in Australia (see Table 4.9).

6.1.1.5 Characteristics of Chinese Medicine Users

The common characteristics for Chinese medicine (CM) users are consistent with most previous findings on CAM users. In general, relatively young, with a secondary education and employed contributed significantly to a relatively high prevalence of CM use ($p<0.05$). Furthermore, the most significant factor related to the use of CM and visits to CM practitioners was educational background. Compared to those without post-secondary education, people having a post-secondary education appeared to be more likely to use CM (22.4% vs. 15.3%) and to visit CM practitioners (14.8% vs. 8.1%) ($p<0.01$) (Table 6.2).

For each CM modality (see Table 4.6), the demographic statistics related to individual prevalence were different. The above noted marked educational difference in CM use was also found in the use of acupuncture and Chinese herbal medicine (any of the modalities, $p<0.01$), but not in other forms of CM. Surprisingly, Australian-born adults were more likely to use acupuncture (10.2%) than those born overseas (6.5%, $p<0.05$), but less likely to use CHM (5.5% vs. 11.1%, $p<0.05$) and Chinese medicine dietary therapy (1.7% vs. 4.7%, $p<0.05$).

A low prevalence of CHM use was also observed in those aged 65 or above (2.6% compared to 8.1% among those aged 18-34, $p<0.05$) and those unemployed (4.6% compared to 8.1% among employed participants, $p<0.05$) (Table 4.6). Moreover, for Chinese therapeutic massage, the only significant difference in use was found between younger adults (aged 18-34 5.7%) and older adults (65 and older, 2.4%, $p<0.05$). Interestingly, 28 participants (2.8% of total participants) had used Chinese medicine dietary therapy, all of whom were from the group of people who rated their personal health as good or better; whereas, no participants who rated themselves in poor health had used Chinese medicine dietary therapy ($p<0.01$). Not

unexpectedly, younger people were more likely to practice Qigong, martial art and Tai Chi (9.5%) than the middle-age group (4.7%, p<0.01) and older people (2.9%, p<0.01).

Table 6.2 Socio-demographic characteristics of users of Chinese medicine

Characteristic#	CM Users		Visited CM practitioner	
	% (SE %)	p†	% (SE %)	p†
Gender				
Female	21.1 (1.8)		11.8 (1.4)	
Male	17.5 (1.7)	0.1270	12.0 (1.4)	0.9447
Age (year)				
18-34	21.8 (2.3)		13.4 (1.9)	
35-64	19.3 (1.7)	0.3718	11.7 (1.4)	0.4485
65+	14.8 (2.6)	0.0451*	10.2 (2.2)	0.2623
Country of Birth				
Australia	19.2 (1.4)		12.9 (1.2)	
Non-Australia	19.3 (2.5)	0.9566	9.2 (1.8)	0.0960
Post-secondary education				
No	15.3 (1.7)		8.1 (1.3)	
Yes	22.4 (1.7)	0.0032*	14.8 (1.4)	0.0005*
Self-reported health status				
Excellent/very good/good	18.9 (1.3)		11.6 (1.1)	
Fair/poor	21.1 (3.2)	0.5306	12.9 (2.6)	0.6538
Employment				
Employed	20.9 (1.6)		12.8 (1.3)	
Unemployed or not in labour force	15.9 (1.9)	0.0417*	9.8 (1.6)	0.1298
Private Health Insurance				
Yes	19.5 (1.6)		13.3 (1.4)	
No	19.4 (1.8)	0.9574	10.3 (1.4)	0.1389
Annual household income				
<A$20,000	18.3 (3.1)		9.5 (2.3)	
A$20,000-A$40,000	18.2 (2.7)	0.9902	10.0 (2.1)	0.8725
>A$40,000	19.9 (1.7)	0.6455	12.9 (1.4)	0.2026

Excludes subjects who did not provide socio-demographic characteristics
† Probability of proportion being significantly different from the first value in each demographic category (Z-test)
* Significance level (p<0.05)

6.1.1.6 Chinese Medicine Utilisation–Regression Analyses

The methodology of conducting multivariate logistic regression analyses was detailed in Chapter 3.6.4.3. With an interest to produce a model that best describe the characteristics of Chinese medicine (CM) users. Separate regression models were developed. These are on overall CM use (of any one of the five modalities), on acupuncture use and on Chinese herbal medicine use. Again, unless otherwise indicated, the regression results presented are unweighted.

Variables that significantly ($p<0.05$) related to CM or acupuncture or CHM use were summarised in Table 6.3. These were the variables that had been entered into each individual regression model. The best-fit significant results of the multivariate analysis are presented in Table 6.4. They show post-secondary education, had consulted a GP in the preceding 12-month and coverage of CAM influenced the private insurance purchase contributed significantly to a participant's decision to use acupuncture. In addition, for the use of CHM, the factors pertaining to a participant's age ranges and country of birth were also significant predictors.

Considering the overall use of CM, similar to the findings on acupuncture users, the factors of educational background and the belief that coverage of CAM influenced the private insurance purchase were statistically significant. It is also worth noting that being resident in different regions in Australia may also impact significantly on the possibility of CM use. As shown in Table 6.4, when using Western Australia as the reference group, the Victoria adults and the Queensland adults were respectively 2.5 and 3.0 times more likely to use CM than adults in Western Australia.

Table 6.3 Predictor variables employed in the regression models on Chinese medicine use

Predictors	ACU	CHM	CM
Demographic factors (block 1)	…	…	…
Age group	…	Yes	…
Residential area	…	…	Yes
Education	Yes	Yes	Yes
Employment	…	Yes	Yes
Country of birth	…	Yes	…
Health factors (block 2)	…	…	…
Visited a GP in past 12 months	Yes	…	…
Visited a GP 4 or more times in past 12 months	…	…	…
External factors (block 3)	…	…	…
Coverage of CAM influences health insurance purchase	Yes	Yes	Yes
CAM should be regulated as rigorously as Western medicine	…	…	Yes
Health conditions (block 4) Visited a GP for 18 specific health problems	…	…	…
Condition No.1: health check-up	Yes	…	…
Condition No.8: diabetes	…	…	Yes
Condition No.9: gastrointestinal	Yes	…	…
Condition No.11: high blood pressure	…	Yes	…
Condition No.18: trauma/injury	Yes	…	Yes

ACU: acupuncture, CHM: Chinese herbal medicine, CM: Chinese medicine

Table 6.4 Multivariate analyses of predictor variables for Chinese medicine use

Predictors		Use of acupuncture Odds ratio & (95% CI)	Use of CHM Odds ratio & (95% CI)	Use of CM Odds ratio & (95%CI)
Post-secondary education	No	1.0		1.0
	Yes	1.678 (1.044–2.697)*		1.485 (1.02–2.146)*
Age	18-34		3.426 (1.282–9.152)*	
	35-64		2.685 (1.037–6.956)*	
	65+		1.0	
Country of birth	Overseas		1.0	
	Australia		0.434 (0.260–0.723)**	
Region	New South Wales			1.691 (0.787–3.633)
	Victoria			2.506 (1.161–5.410)*
	Queensland			3.012 (1.367–6.637)**
	South Australia			1.768 (0.689–4.538)
	Western Australia			1.0
Consulted a GP in the past 12 months	No	1.0		
	Yes	2.064 (1.010–4.217)*		
Coverage of CAM influences health insurance purchase	No	1.0		1.0
	Yes	2.201 (1.366–3.546)**		2.115 (1.463–3.057)**
Omnibus Tests of Model Coefficients				
Chi square (degree of freedom, p value)		23.044 (3, <0.0001)	16.539 (3, =0.001)	35.059 (6, <0.0001)
Percentage accurate in classification		90.7	92.5	79.4

* p<0.05; ** p<0.01; CI: confidence interval; CM: Chinese medicine; CHM: Chinese herbal medicine

6.1.1.7 Rationale for Use of Acupuncture and Chinese Herbal Medicine

Acupuncture

A total of 97 acupuncture users responded to the question on rationale for use. The vast majority (92.0%) said it was for the purpose of treating medical conditions, including 14.1% who used it for both general health improvement and medical conditions. The remaining 8.0% used acupuncture for improving general health and well-being only. Among those who used acupuncture for a medical condition, the most common conditions were back pain and related problems (20.7%), shoulder pain and problems (15.5%), arthritis (8.5%), injury (7.0%) and knee-related problems (5.1%). The detailed medical conditions related to the use of acupuncture are presented in Table 6.5. Specifically and significantly, the majority of those who used acupuncture for treating medical conditions were aged 35-64 (97.2%) and 65 and older (92.0%), while only 80.6% users aged 18-34 used acupuncture for this purpose (χ^2=6.258, p=0.044).

Table 6.5 Medical conditions related to the use of acupuncture treatment

Medical condition	Number of cases	Medical condition	Number of cases
Musculoskeletal related:	…	Chronic fatigue syndrome	2
Back pain and related	18	Gastrointestinal	2
Non-specific muscular problems	17	Stop smoking	2
Shoulder related	12	Anxiety and depression	1
Arthritis	8	Blood cholesterol	1
Injury-related	6	Energy-related problems	1
Knee-related	5	Gynaecologic problems	1
Neck-related	3	Hay fever	1
Spinal-related	3	Infertility	1
Ankle-related	1	Insomnia	1
Multiple sclerosis	1	Irregular heart beat	1
Other conditions:	…	Loss weight	1
Headache	3	Lung related	1
Sinus problem	3	Pregnancy	1
Asthma	2	Prostate problem	1

Chinese Herbal Medicine (CHM)

A total of 73 CHM users responded to the question on rationale for use. About two thirds (60.4%) used it to treat medical conditions, including 29.7% who used it both for general health improvement and medical conditions. Thus, over 39.6% used CHM to improve general health and well-being only. Among those who used CHM for a medical condition, the most common conditions were colds and flu (11.6%), and problems related to energy level (8.5%). There were at least 30 different conditions for which people had used CHM (Table 6.6). Specifically, the highest prevalence of CHM use for medical conditions was among those aged 35-64 (72.0%), followed by those aged 18-34 (51.0%), while only 14.8% of those aged 65 and older used CHM for treating medical conditions (χ^2=7.292, p<0.026). In addition, those having private health insurance were also more likely to use CHM for medical conditions (73.0%) than those without it (41.6%, χ^2=6.935, p=0.008).

Table 6.6 Medical conditions related to the use of Chinese herbal medicine treatment

Medical condition	Number of cases	Medical condition	Number of cases
Colds/flu	6	After hysterectomy	1
Energy related problems	4	Blood cholesterol	1
Asthma	3	Chronic fatigue syndrome	1
Anxiety and depression	3	Diabetes	1
Back pain and related	3	Heart-related	1
Hay fever	3	High blood pressure	1
Gastrointestinal	3	Infertility	1
Arthritis	2	Injury related	1
Cancer	2	Leukaemia	1
Eye problems	2	Low immune system	1
Gynaecologic problems	2	Nervous condition	1
Neck-related	2	Lung-related	1
Non-specific muscular problems	2	Toothache	1
Headache	2	Sinus problem	1
Shoulder related problems	2	Skin problem	1
Ankle related problems	1	Stress relief	1

6.1.1.8 Outcomes of Use of Acupuncture and Chinese Herbal Medicine

In an effort to compare expectation of acupuncture or CHM users with the actual outcomes of treatment, users were asked to respond to a question of whether the treatment they used had cured the disease/solved the problem, relieved the symptoms and/or improved general health and well-being.

Expectations of and Actual Outcome of Using Acupuncture

Table 6.7 summarised the responses (number and percentage) from acupuncture users on their expectations and outcomes. Nearly half (48.5%) of users expected acupuncture could cure their disease. After receiving treatment, over half (59.2%) of these users considered acupuncture had cured their disease or had solved the health problem they had before the treatment. In addition, seven out of 30 (23.3%) users who did not consider acupuncture would cure their disease found acupuncture did provide such an outcome. A further six users who had been unsure whether acupuncture would cure their disease/solve their problem had also experienced a positive outcome, thus, the total positive outcome of curing diseases or solving health problems was 41.6%.

More users considered the outcome of acupuncture would be a relief of symptoms (72.3%) or that it would improve general health and well-being (71.3%) than cure the diseases (48.5%). Among those who considered acupuncture would relieve their symptoms of illnesses, the majority (89.0%) had experienced a positive outcome. A high proportion of users who did not believe the outcome would be a relief of symptoms, or who were uncertain about this outcome, also reported a positive outcome (90.0% and 77.8%, respectively). This represented a total positive outcome of 87.1% in the use of acupuncture to relieve symptoms.

In all, nearly four out of five (78.2%) users considered acupuncture likely to improve their general health and well-being. The percentage was higher among those who had a positive expectation of using acupuncture to improve their general health (i.e. 86.1%). When taking no consideration of users' expectations towards acupuncture before treatment, about one-third (33.7%) users considered that acupuncture had helped them achieve all three outcomes. However, six acupuncture users responded that there was no effect after treatment. Demographic information of none of these six users had been found to be particular noticeable, although these users resided in four different states other than Victoria.

Table 6.7 Expectations of and actual outcomes of using acupuncture

Before Treatment (expectation)		After treatment (outcome)		
		Yes n (%)*	No n (%)*	Not sure n (%)*
Cure the disease/solve the problem, n (% of users)**				
Yes	49 (48.5%)	29 (59.2%)	18 (36.7%)	2 (4.1%)
No	30 (29.7%)	7 (23.3%)	23 (76.7%)	0 (0%)
Not sure	22 (21.8%)	6 (27.3%)	10 (45.5%)	6 (27.3%)
Total	101	42 (41.6%)	51 (50.5%)	8 (7.9%)
Relief of symptoms, n (% of users)**				
Yes	73 (72.3%)	65 (89.0%)	7 (9.6%)	1 (1.4%)
No	10 (9.9%)	9 (90.0%)	1 (10.0%)	0 (0%)
Not sure	18 9 (17.8%)	14 (77.8%)	1 (5.6%)	3 (16.7%)
Total	101	88 (87.1%)	9 (8.9%)	4 (4.0%)
Improve general health and well-being, n (% of users)**				
Yes	72 (71.3%)	62 (86.1%)	7 (9.7%)	3 (4.2%)
No	16 (15.8%)	8 (50.0%)	8 (5.0%)	0 (0%)
Not sure	13 (12.9%)	9 (69.2%)	3 (23.1%)	1 (7.7%)
Total	101	79 (78.2%)	18 (17.8%)	4 (7.7%)

* Percentages are of users within each row category
** Percentages are of total acupuncture users

Expectation of and Actual Outcome of Using Chinese Herbal Medicine

Table 6.8 summarises the responses of CHM users on their expectations and outcome of using CHM. Similar to the expectation of acupuncture curing disease, just over half (53.2%) of users expected CHM would cure their disease. After receiving treatment, over two thirds (70.7%) of these users considered CHM had cured their disease or had solved the health problem they had before treatment. In addition, nearly one in five (16.7%) users who did not consider CHM would cure their disease had found CHM did provide such an outcome. A further eight users who were unsure whether CHM would cure their disease/solve their health problem had experienced a positive outcome, thus, the total positive outcome of curing diseases or solving problems was 51.9%.

More users considered the outcome of CHM would be a relief of symptoms (79.2%) or would improve general health and well-being (84.4%) than cure the diseases (53.2%). Among those who considered CHM would relieve their symptoms of illnesses, the majority (90.2%) experienced a positive outcome. A high proportion of users who had not believed a relief of symptoms was possible or who had been uncertain about such an outcome also reported a positive outcome (75.0% and 66.7%, respectively). This represented a total positive outcome of 85.7% towards relieving symptoms by CHM.

In all, nearly nine out of ten (89.6%) users considered CHM was favourable in improving their general health and well-being. The percentage was higher among those who had a positive expectation of using CHM to improve their general health (i.e. all but two users, or 96.9%). When taking no notice of users' expectations towards CHM before treatment, a total of 33 (42.9%) users considered that CHM had helped them achieve all three outcomes. In contrast, there were two CHM users who reported there was no effect after treatment. Neither of these had expected CHM would cure their disease or relieve their symptoms.

Table 6.8 Expectations of and actual outcomes of using Chinese herbal medicine

Before Treatment (expectation)		After treatment (outcome)		
		Yes, n (%)*	No, n (%)*	Not sure, n (%)*
Cure the disease/solve the problem, n (% of users)**				
Yes	41 (53.2%)	29 (70.7%)	7 (17.1%)	5 (12.2%)
No	18 (23.4%)	3 (16.7%)	15 (83.3%)	0 (0%)
Not sure	18 (23.4%)	8 (44.4%)	2 (11.1%)	8 (44.4%)
Total	77	40 (51.9%)	24 (1.2%)	13 (16.9%)
Relief of symptoms, n (% of users)**				
Yes	61(79.2%)	55 (90.2%)	3 (4.9%)	3 (4.9%)
No	4 (5.2%)	3 (75.0%)	1 (25.0%)	0 (0%)
Not sure	12 (15.6%)	8 (66.7%)	4 (33.3%)	0 (0%)
Total	77	66 (85.7%)	8 (10.4%)	3 (3.9%)
Improve general health and well-being, n (% of users)**				
Yes	65 (84.4%)	63 (96.9%)	2 (3.1%)	0 (0%)
No	4 (5.2%)	0 (0%)	3 (75.0%)	1 (25.0%)
Not sure	8 (10.4%)	6 (75.0%)	0 (0%)	2 (25.0%)
Total	77	69 (89.6%)	5 (6.5%)	3 (3.9%)

* Numbers and percentages are of users within each row category
** Numbers and percentages are of total acupuncture users

General Helpfulness of Acupuncture and Chinese Herbal Medicine

All users also rated their experience on the overall general helpfulness of acupuncture and CHM. A great proportion of users considered acupuncture treatment they had used was very helpful (60.0%) or somewhat helpful (30.1%), while a small proportion of users considered the outcome was not very helpful (six users, 5.1%) or not at all helpful (three users, 2.7%). These proportions were similar among the rating towards CHM. The vast majority of CHM users believed CHM treatment they had used was very helpful (55.6%) or somewhat helpful (39.3%), while two persons considered CHM was not very helpful or not at all helpful.

6.1.1.9 Safety Concerns of Acupuncture and Chinese Herbal Medicine Use

Adverse Events after Acupuncture and Chinese Medicine Treatment

Among all acupuncture users, four persons reported adverse events (patient self-perceived) after having acupuncture treatment, but one of the answers was not recorded by the interviewer. Three users referred to the pain of the needle (whether or not it should be considered as an adverse event is debatable), and one of them also mentioned having a bruise on the skin. This corresponds to an incidence rate of adverse event of 3 in 100 acupuncture users. Alternatively, among all participants who had visited acupuncturists, a total of 699 consultations had been made. This reflects an adverse event incidence rate of 4.3 per 1,000 consultations.

For Chinese herbal medicine (CHM), seven persons mentioned adverse event but one of the answers was not recorded by the interviewer. Two users experienced nausea after taking CHM; another two users considered the taste of the herbs as unpleasant or too strong. One person felt dizzy, and another user stated that "the liver cleansing power played havoc with me". Thus, this corresponds to an incidence rate of 7.8% among CHM users. More strictly, when the definition of adverse event excludes mild gastrointestinal symptoms (e.g. nausea, unpleasant taste and discomfort), the incidence rate can be estimated as approximately 2.6%. However, whether the participants who encountered CHM adverse events used herbs that had been prescribed by their CHM practitioners or were self-prescribed was not established (a total of 160 consultations had been made among all CHM users, but the rate of self-prescription was considerable high). Thus, an adverse event incidence rate per 1,000 consultations seems inappropriate for CHM users.

6.1.1.10 Referral Pattern and Future Use of Acupuncture

Referral Pattern

Most commonly, acupuncture users had received advice from their friends or relatives (40.8%). Advice from a medical doctor accounted for just over one fifth (20.7%) of the total responses. Some users had also received advice from a complementary medicine practitioner (18.7%), or from a newspaper, television and the Internet (4.2%). Only one user was referred by another health professional, such as a nurse.

It is of safety concern that one in six users (17.8%) did not receive advice from any source. In particular, the use of acupuncture without receiving advice was more common in those aged 35-64 (27.1%) than the younger group (18-34, 9.3%) and those aged 65 and older (none did not receive advice, χ^2=8.230, p=0.016). In addition, middle-age users were also less likely (11.0%) to receive advice from a friend or a relative than the younger (46.3%) and older (49.2%) users, (χ^2=6.953, p=0.031). those with private health insurance were more likely to receive advice from CAM practitioners to use acupuncture (25.7% with insurance vs. 5.7% without insurance, χ^2=5.915, p=0.015).

Future Use of Acupuncture

Among all survey participants, nearly two thirds (62.4%) reported they would consider acupuncture as an option for their health care in the future, while nearly one third (30.4%) would not consider; 7.2% of users were not sure whether or not they would consider this option. More specifically, among the total of 991 participants who indicated they would consider acupuncture in the future, younger adults, those with postsecondary education, private health insurance and a higher income range were more likely to use acupuncture again

(Table 6.9). In addition, compared to other states, a relatively lower proportion of South Australia residents said they would consider using acupuncture in the future, although this is not statistically significant (χ^2=8.552, p=0.073). On the other hand, among acupuncture users, the vast majority (94.7%) indicated they would use acupuncture again. Of the three users who indicated they would not consider using acupuncture in the future, none had previously experienced side-effects after using acupuncture, but two acupuncture users found it had not been very helpful for their health conditions (i.e. arthritis and osteoarthritis).

Table 6.9 Consideration for the use of acupuncture treatment in the future

Characteristic	Consider using acupuncture in the future		Statistical difference	
	Yes (%)	No (%)	Chi Square	p
Gender			0.216	0.642
Female	66.5	33.5		
Male	67.9	32.1		
Age (year)			6.315	0.043
18-34	69.2	30.8		
35-64	68.0	31.2		
65+	59.0	41.0		
Country of Birth			2.554	0.11
Australia	68.8	31.2		
Non-Australia	63.1	36.9		
State			8.552	0.073
New South Wales	70.6	29.4		
Victoria	67.3	32.7		
Queensland	69.0	31.0		
South Australia	54.5	45.5		
Western Australia	62.7	37.3		
Self-reported health status			0.505	0.477
Excellent/very good/good	67.6	32.4		
Fair/poor	64.6	35.4		
Post-secondary education			6.537	0.011
No	63.0	37.0		
Yes	70.7	29.3		
Employment			2.569	0.109
Employed	69.1	30.9		
Unemployed or not in labour force	64.0	36.0		
Private Health Insurance			10.176	0.001
Yes	71.6	28.4		
No	62.0	38.0		
Annual household income				
<A$20,000	57.8	42.2	10.559	0.005
A$20,000-A$40,000	69.8	30.2		
>A$40,000	71.7	28.3		

6.1.1.11 Referral Pattern and Future Use of Chinese Herbal Medicine

Referral Pattern

Similar to the referral pattern for the use of acupuncture, most commonly, CHM users had received advice from their friends or relatives (45.4%). Advice from CAM practitioners accounted for just over one quarter (25.4%) of the total responses. However, only 6.5% users had received advice from a medical doctor. Receiving advice from a newspaper, television and the Internet (8.5%) and other health professionals (7.3%) constituted a relatively high proportion of responses. It is a safety concern that nearly one in 10 users (9.9%) did not receive advice from any source. In all, none of the demographic information was remarkable in relation to the referral pattern for CHM use.

Future Use of Chinese Herbal Medicine

Among all survey participants, over half (52.9%) said they would consider CHM as an option for their health care in the future, while over one third (35.0%) would not consider it as an option; 12.1% users were not sure whether or not they would consider this treatment. More specifically, among the total of 941 participants who had answered definitively about whether or not they would consider CHM in the future, those female, younger adults, who resided in New South Wales, Victoria and Queensland, and who were employed were more likely to use CHM again (Table 6.10). Similar to acupuncture use, the lowest rate of future projected CHM use among states was also reported in South Australia. On the other hand, among CHM users, the vast majority (97.5%) reported they would use CHM again. Of the two users who said they would not consider CHM in the future, one had previously experienced a side-effect after using CHM (dizziness). Another person had used CHM for his back pain and high blood pressure problem, but mentioned it had not been very helpful.

Table 6.10 Consideration for the use of Chinese herbal medicine treatment in the future

Characteristic	Consider using CHM in the future		Statistical difference	
	Yes (%)	No (%)	Chi Square	p
Gender			8.004	0.005
Female	64.7	35.3		
Male	55.7	44.3		
Age (year)			28.518	0.0001
18-34	66.8	33.2		
35-64	62.0	38.0		
65+	41.4	58.6		
Country of Birth			1.226	0.268
Australia	61.3	38.7		
Non-Australia	57.1	42.9		
State			17.086	0.002
New South Wales	62.4	37.6		
Victoria	66.5	33.5		
Queensland	61.6	38.4		
South Australia	42.8	57.2		
Western Australia	50.3	49.7		
Self-reported health status			2.969	0.085
Excellent/very good/good	61.3	38.7		
Fair/poor	53.7	46.3		
Post-secondary education			3.738	0.053
No	56.7	43.3		
Yes	63.0	37.0		
Employment			6.687	0.01
Employed	63.4	36.6		
Unemployed or not in labour force	54.6	45.4		
Private Health Insurance			2.905	0.088
Yes	63.2	36.8		
No	57.7	42.3		
Annual household income			4.487	0.106
<A$20,000	52.9	47.1		
A$20,000-A$40,000	63.3	36.7		
>A$40,000	61.9	38.1		

CHM: Chinese herbal medicine

6.1.2 Chiropractic

6.1.2.1 Overview

As noted above, the overall prevalence of chiropractic use in Australia was 16.1% (95%CI: 13.9% – 18.3%), being one of the most popular forms of CAM in Australia. The vast majority (90.6%) of chiropractic users had visited practitioners for therapy of all forms of CAM users. Chiropractic users had the lowest proportion (9.4%) who self-administrated the therapy. This also implies that approximately one in seven adult Australians (14.6%, 95%CI: 12.4% – 16.7%) had visited a chiropractor in the 12-month preceding the survey in 2005.

In general, those born in Australia who had private health insurance and higher household incomes were more likely to use chiropractic ($p<0.01$, Table 4.6). Gender, age and educational background did not appear to be major factors related to chiropractic use. On the other hand, there were smaller variations in users in different states, although the prevalence in Queensland (14.4%) and Western Australia (14.9) was slightly lower than the national average (not significant) while slightly higher than national average prevalence was reported in New South Wales (17.0%), Victoria (17.4%) and South Australia (17.0%) (see Table 5.1 and Table 5.2).

In terms of the frequency of visiting chiropractors, an annual rate of approximately 8.4 times per user was estimated for all users, which approximates to 19.05 million visits per year in Australia (see Table 4.9). The average out-of-pocket expenditure of visiting a CAM practitioner, as estimated in the current survey was A$25 (see Chapter 4.1.7.1). This suggests that a total out-of-pocket expenditure of A$476 million on chiropractor visits. In addition, of those users, 23 had incurred additional costs such as books and equipment related to their

chiropractic treatments. The median total chiropractic-related expenditure was A$200. Thus, nationwide, A$68.37 million would had spent on chiropractic-related items other than costs related to practitioner visits. This suggests, Australia nationwide, the total out-of-pocket expenditure spent on chiropractic services in the 12-month period was approximately A$544 million. (see Appendix G9 for the unadjusted expenditure and G10 for a summary statistics of the adjusted data).

6.1.2.2 Rationale for the Use of Chiropractic

After being identified as chiropractic users, participants were also asked about their main reasons (multiple responses) for using chiropractic. In all, well over two thirds (68.6%) used chiropractic for the relief of symptoms, with nearly half (42.5%) using chiropractic for the purpose of relieving symptoms only and not for any other purpose. Approximately one third (32.3%) used chiropractic for improving general health and well-being, with over 11.9% using it, exclusively to improve general health and well-being. Also, about one third (36.2%) of chiropractic users used it to improve the ability to undertake normal daily activities, while nearly one in 10 (9.4%) users also used chiropractic to improve their sporting performance. About 5.3% used chiropractic for all four purposes.

More specifically, cross-tabulation analyses revealed that the only gender difference in the reasons for using chiropractic was to improve sporting performance. Not surprisingly, the use of chiropractic to improve sporting performance by male users (15.7%) was much higher than female users (4.0%) (χ^2=6.828, p=0.009). Among different age groups, the only difference in the reasons for using chiropractic was to improve the ability to undertake normal daily activities. More than half (51.9%) of those 65 years of age or older used chiropractic for this purpose, compared with 38.2% of those aged 35-64 and 24.3% of those aged 18-34 (χ^2=6.292, p=0.043). Other factors, such as education level, employment status and personal health status did not appear to influence choosing chiropractic.

In terms of the specific symptoms for which users had sought chiropractic, nearly two thirds (65.7%) had used it for back pain or back-related problems. Other common conditions for which users had resorted to chiropractic were neck pain and related problems (20.7%), non-

specific musculoskeletal problems (14.9%), headache and migraine (9.3%), and shoulder pain and related problems (5.3%). In addition, among those had used chiropractic to relieve symptoms, near half (43.9%) did so solely to relieve back pain or back-related problems and not for any other health conditions. On the other hand, only one person reported using chiropractic for a condition/symptom unrelated to a musculoskeletal problem (a gynaecological condition).

6.1.2.3 Use of Chiropractic–Regression Analyses

Bivariate analyses revealed that nine predictor variables were significantly associated with chiropractic use: income range, country of birth, had consulted a GP in the preceding 12 months, consulted a GP four times or more in the preceding 12 months, covered by private health insurance coverage of CAM influences the purchase of health insurance, visited a GP for back problems, visited a GP for cancer, and visited a GP for diabetes. These were entered into the logistic regression model by the stepwise method.

Table 6.11 presents the results of the significant regression model for chiropractic users. It was not unexpected that those had visited a GP for back problems were 3.5 times more likely to have also used chiropractic than those who had not visited a GP for back problems. Also participants' household income status substantially influenced their use of chiropractic. Compared to the low-income participants, people with a household income A$20,000 - A$40,000 were 3.3 times more likely to use chiropractic. The odds ratio increased to 3.8 times more likely to use chiropractic among those with a household income higher than A$40,000.

Table 6.11 Multivariate analyses of predictor variables for chiropractic use

Predictors		Odds ratio (95% CI)
Income range	<A$20,000	1.0
	A$20,000-A$40,000	3.318 (1.510–7.287)**
	>A$40,000	3.787 (1.844–7.777)**
Country of birth	Overseas	1.0
	Australia	2.070 (1.241–3.454)**
Consulted a GP in the past 12 months	No	1.0
	Yes	1.995 (1.133–3.513)*
Coverage of CAM influences health insurance purchase	No	1.0
	Yes	2.325 (1.560–3.463)**
Visited a GP for back problems	No	1.0
	Yes	3.494 (1.447–8.437)**
Omnibus Tests of Model Coefficients		
Chi square (degree of freedom, p value)		60.236 (6, <0.0001)
Percentage accurate in classification		83.4

* p<0.05; ** p<0.01; CI: confidence interval.

6.1.2.4 Outcomes and Safety Concerns of Use of Chiropractic

Users were asked the specific outcomes after their use of chiropractic. Almost three quarters (71.9%) mentioned that it relieved pain; half (50.2%) found it improved their ability to undertake normal daily activities; nearly half (45.5%) also found it improved their well-being; an additional 23.1% of users also considered chiropractic had decreased a disability. In total, nearly one in five (19.5%) users found that, after seeking chiropractic treatment, they had achieved all four outcomes.

Older people (58.2%) and those from the middle-age group (aged 34-64, 58.9%) were more likely to use chiropractic to improve their ability to undertake normal daily activities than the younger adults (aged 18-34, 30.7%) (χ^2=11.08, p=0.004). Also, a higher proportion of users with poor or fair health reported a helpful outcome of decreased disability (38.6%) and improved normal daily activity (67.5%) than those who considered themselves to be in better health (19.5%, χ^2=5.481, p=0.019; and 46.4%, χ^2=4.751, p=0.029, respectively).

It may be of particular interest that there were fewer users in Victoria (58.4%) and Queensland (65.6%) who provided a positive answer to the outcome of pain relief than users in New South Wales (82.3%), South Australia (81.3%) and Western Australia (83.9%) (χ^2=9.852, p=0.043). No additional regional difference was observed in other outcomes. On the other hand, more users with private health insurance believed chiropractic had improved their general health (51.6%) than people without private health insurance (33.0%) (χ^2=5.303, p=0.021).

All users also rated their experience on the overall general helpfulness of chiropractic. The majority of users believed the chiropractic treatment they had used was very helpful (71.4%)

or somewhat helpful (21.6%), while a small proportion of users received a less helpful outcome (not very helpful, 2.6%, and not at all helpful, 2.4%).

Among all users, a total of nine persons reported adverse events (patient self-perceived) after having chiropractic treatment. These included pain after treatment (three persons), headache/migraine immediately after treatment (two persons), and tiredness (one person). The worst scenario was aggravation of a major back injury (treatment was provided without an x-ray). Two reported adverse events which could be considered as "dissatisfaction of treatment", were "it does not do any thing", and "you tend to go back and they fix it". Thus, this (7 reported adverse events) corresponds to an incidence rate of 4.0% among users. Alternatively, among all participants who had visited chiropractors, a total of 1,352 consultations were made. This reflects an adverse event incidence rate of 5.2 per 1,000 consultations.

With respect to the general opinion on the safety aspect of chiropractic, over 81.0% of all survey participants either strongly agreed (16.5%), agreed (43.6%) or partially agreed (20.9%) that chiropractic is safe. Perception of safety was even more convincing when the opinion of chiropractic users is considered. Those who strongly agreed that chiropractic is a safe form of treatment increased from 16.5% of all survey participants to 43.2% of chiropractic users. On the other hand, those who did not agree that "chiropractic is a safe form of treatment" decreased from 9.6% of all participants to approximately 1.9% (three users) of chiropractic users. In the latter category, one had encountered an adverse effect (i.e. severe pain).

6.1.2.5 Referral Pattern and Future Use of Chiropractic

In terms of using chiropractic on the advice of other people, the most common response was from users' friends or relatives (43.6%). Advice from a medical doctor accounted for exactly one fifth (20.0%) of the total responses. Some users also received advice from a complementary medicine practitioner (7.2%), from a newspaper, television and the Internet (1.3%) or from another health professional such as a nurse (2.6%).

It is of safety concern that over one quarter (27.2%) of chiropractic users did not receive advice from any source. In particular, the use of chiropractic without receiving advice was much more common in those aged 65 and older (45.6%) and those aged 35-64 (31.2%) than in the younger group (18-34, 9.6%, χ^2=13.505, p=0.001). As may have been expected, those having a better health (self-rated) were more likely to receive advice from a friend or relative (47.0% vs. 27.8%, χ^2=4.051, p=0.044), while those having poor or fair health were more likely to receive advice from their medical doctor (36.9% vs. 16.1%, χ^2=7.208, p=0.007). In contrast, those who had private health insurance were less likely to receive advice from their medical doctor to use chiropractic (15.6% vs. 29.0%, χ^2=4.286, p=0.039), but more likely to use chiropractic without any advice (32.7% vs. 16.7%, χ^2=4.957, p=0.026).

Among all survey participants, well over two thirds (68.1%) said they would consider chiropractic as an option for their health care in the future, while 26.9% would not consider it. More specifically, among the total of 1,015 participants who had made a definitive answer of whether or not they would consider chiropractic in the future, the younger, male adults, who resided in the states of New South Wales and Western Australia, were in a better health, employed and in the higher income range, were more likely to use chiropractic (Table 6.12). On the other hand, among chiropractic users, the vast majority (93.3%) said they would use

chiropractic again. Of the ten users (5.1%) who said they would not consider using chiropractic in the future, two had previously experienced side-effects after using chiropractic, including severe pain and aggravation of a major back injury.

Table 6.12 Consideration for the use of chiropractic treatment in the future

Characteristic	Consider using chiropractic in the future		Statistical difference	
	Yes (%)	No (%)	Chi Square	p
Gender			5.667	0.017
Female	68.3	31.7		
Male	75.1	24.9		
Age (year)			17.184	0.0002
18-34	79.1	20.9		
35-64	70.2	29.8		
65+	62.0	38.0		
Country of Birth			0.001	0.993
Australia	71.8	28.2		
Non-Australia	71.9	28.1		
State			19.637	0.001
New South Wales	76.5	23.5		
Victoria	68.5	31.5		
Queensland	68.3	31.7		
South Australia	58.0	42.0		
Western Australia	82.7	17.3		
Self-reported health status			4.014	0.045
Excellent/very good/good	72.8	27.2		
Fair/poor	64.9	35.1		
Post-secondary education			0.017	0.896
No	71.9	28.1		
Yes	71.5	28.5		
Employment			9.695	0.002
Employed	74.9	25.1		
Unemployed or not in labour force	65.6	34.4		
Private Health Insurance			0.293	0.588
Yes	70.9	29.1		
No	72.5	27.5		
Annual household income			9.970	0.008
<A$20,000	64.3	35.7		
A$20,000-A$40,000	68.1	31.9		
>A$40,000	75.7	24.3		

6.1.3 Osteopathy

6.1.3.1 Overview

As above noted, the overall prevalence of osteopathy use in Australia was 4.6% (95%CI: 3.3% – 5.9%, a total of 51 unweighted numbers of users). As a provider-based therapy, most osteopathy users (76.4%) had visited practitioners for treatment. Surprisingly, the proportion of self-administrating users (23.6%) was quite high. In total, approximately one in every 28 adult Australians (3.5%, 95%CI: 2.4% – 4.6%) had visited an osteopath in the 12 months preceding the survey in 2005.

There are different forms of osteopathy in clinical practice, of which the most commonly known and reported by the survey participants was as a form of massage therapy (66.1%). At least half the participants also considered that the type of osteopathy treatment they had used was the mobilisation or "popping of joints" (58.6%), stretching (58.5%), or a gentle technique (may be called functional or cranial, 51.3%). Over 57.3% also mentioned that they had received exercise advice from their osteopathy practitioners.

Consistent with the characteristics that related to overall CAM use, female (5.8%) participants were more likely to use osteopathy than male participants (3.3%, $p<0.05$). Interestingly, those in the middle household income range used the least osteopathy (1.3%), while those in the lower and higher income ranges used osteopathy much more (6.7% and 5.5% respectively, $p<0.05$) (Table 4.6). In addition, osteopathy use appeared to vary between states. Participants from New South Wales and Victoria were more likely to use osteopathy than those from any other states ($p<0.05$, Table 5.1). In relation to the characteristics of those who visiting an osteopath, in addition to the differences in the use of osteopathy, educational background and

private health insurance coverage also appeared to be determinants of osteopathy use (Table 5.2).

Users of osteopathy visited practitioners approximately 5.9 times per annum. Thus, a total of 3.08 million visits were estimated per annum in Australia (see Table 4.9). Using the average out-of-pocket expenditure of visiting a CAM practitioner, as estimated in the current survey (A$25, Chapter 4.1.7.1), this equals A$77 million spent on osteopath visits in the 12 months preceding the survey. In addition, ten osteopathy users indicated that they had spent additional money on items such as books and equipments related to their osteopathy treatments. The median cost was A$50.0. Thus, nationwide, the total out-of-pocket expenditure on osteopathy in the 12-month period can be estimated as A$83.47 million, with A$6.47 million spent on items other than practitioner visits (see Appendix G9 for the unadjusted expenditure and G10 for a summary statistics of the adjusted data).

6.1.3.2 Rationale for the Use of Osteopathy

Osteopathy users were asked the same questions as were put to chiropractic users about their main reasons for seeking treatment (see Chapter 6.1.2.2), and they also provided multiple responses to their rationale for use. In all, over three quarters (75.9%) used osteopathy for the relief of symptoms, including nearly two fifths (38.0%) who used it solely for the purpose of relieving symptoms. Over two fifths (40.6%) used osteopathy to improve general health and well-being, including 14.5% who used it for the purpose of improving general health and well-being only, rather than for other purposes. More than two fifths (41.9%) of participants used osteopathy to improve their ability to undertake normal daily activities, while nearly one in six (17.1%) used osteopathy to improve their sporting performance.

Cross-tabulation analyses revealed an interesting finding. Those born overseas used osteopathy to improve general health and well-being much more than those born in Australia (70.6% vs. 33.5%, χ^2=4.297, p=0.038). On the other hand, the only gender difference in the reasons for using osteopathy was to improve the ability to undertake normal daily activities. In this respect, female users were three times (54.2%) more likely to use osteopathy than male users (19.7%, χ^2=5.443, p=0.020).

Among users who had resorted to osteopathy for the relief of symptoms, 48.4% had used it for back pain or back related problems, 35.2% had used it for non-specific musculoskeletal problems (eg. restricted movement), 22.9% had used it for shoulder problems, and 10.7% for neck problems. Osteopathy users had also used it for other conditions, such as headache, spinal or knee problems. In addition, among those had used osteopathy to relieve symptoms, nearly one quarter (24.7%) had used it solely to relieve back pain or back-related problems only.

6.1.3.3 Use of Osteopathy–Regression Analyses

Bivariate analyses revealed that five predictor variables were significantly associated with osteopathy use: gender, income range, coverage of CAM influences the purchase of private health insurance, visiting a GP for back problems, and visiting a GP for heart-related problems. These were entered into the logistic regression model by the stepwise method.

As presented in Table 6.13, those who had visited a GP for back problems were 4.3 times more likely to have also used osteopathy than those who without back problems. It is worth further investigating why the highest odds ratio of osteopathy use was those with the lowest household incomes. Compared to those with a household income of A$20,000 A$40,000, people who earned less than A$20,000 were up to 18 time more likely to use osteopathy. The odds ratio of people with the lowest incomes using osteopathy was high, (1.6 times higher, but not statistically significant) compared to those with household incomes higher than A$40,000 (see Table 4.6). This finding may be somewhat unreliable due to the relatively small sample size (45 osteopathy users) entered into the regression analysis.

Table 6.13 Multivariate analyses of predictor variables for osteopathy use

Predictors		Odds ratio (95% CI)
Income range	<A$20,000	1.0
	A$20,000-A$40,000	0.054 (0.007–0.429)**
	>A$40,000	0.624 (0.298–1.306)
Coverage of CAM influences health insurance purchase	No	1.0
	Yes	4.760 (2.139–10.592)**
Visited a GP for back problems	No	1.0
	Yes	4.318 (1.137–16.402)*
Omnibus Tests of Model Coefficients		
Chi square (degree of freedom, p value)		34.817 (4, <0.0001)
Percentage accurate in classification		95.0

* p<0.05; ** p<0.01; CI: confidence interval

6.1.3.4 Outcomes and Safety Concerns of Use of Osteopathy

In regard to the outcomes of osteopathy use, over three quarters (79.5%) of users mentioned that it relieved pain; three out of five users (60.5%) found it improved their ability to undertake normal daily activities; nearly half (45.6%) also found it improved their well-being; an additional 40.6% of users considered osteopathy had decreased a disability. In total, nearly one in three (29.7%) users found that, after seeking osteopathy treatment, they had achieved all four outcomes. None of the particular user characteristics was found significantly related to different outcomes.

All except two users rated their experience on the overall general helpfulness of using osteopathy. The majority of users believed their osteopathy treatments were very helpful (64.2%) or somewhat helpful (28.4%), while only two users reported a less helpful outcome (one did not believe it was very helpful, while another believed it was not at all helpful).

Importantly, a total of four users (an incidence rate of 7.8%) reported adverse events (patient self-perceived) after having osteopathy treatment. These included more pain, soreness, "very tired'' and "neck cracks a lot more after treatment''. However, it is important to note that all of these were controversial in terms of whether or not they should be considered as adverse events. The adverse event incidence rate per 1,000 consultations was not calculated against the osteopathy treatment.

6.1.3.5 Referral Pattern and Future Use of Osteopathy

The most common referral channel for using osteopathy was from users' friends or relatives (38.1%). Advice from complementary medicine practitioners accounted for over one fifth (21.5%) of the total responses, closely followed by advice from a medical doctor (16.1%). Two additional users were referred by other health professionals, such as a nurse (one person) and through newspapers, television and Internet (one person). However, there were six users (13.2%) did not receive advice from any source. Four of them were from New South Wales and five of them were female.

Among 32 osteopathy users who were employed at the time of the survey, only two (weighted percentage, 6.4%) had received advice from their medical doctors while six out of 18 (29.5%) unemployed osteopathy users had received advice from a medical doctor (χ^2=4.686, p=0.030). One third (ten out of 28, 33.7%) of the users aged 35-64 had received advice from a complementary medicine practitioner, while only one user aged 65 and older and none from the group aged 18-34 had received advice from a CAM practitioner (not statistically significant, χ^2=5.899, p=0.052).

Among all survey participants, just over half (52.0%) said they would consider osteopathy as an option for their health care in the future; 24.9% would not consider, and the remaining 23.1% were not sure about osteopathy (e.g. lack of knowledge of osteopathy and did not respond to the current question). On the other hand, among osteopathy users, five users (12.4%) said they would not consider using osteopathy again. This included one person who had experienced a side-effect (pain) after using osteopathy.

Finally, among the total of 814 participants with a definite response to whether or not they would consider osteopathy in the future, there was no difference between participants' socio-demographic characteristics and their decision to use osteopathy in the future (Table 6.14).

Table 6.14 Consideration for the use of osteopathy treatment in the future

Characteristic	Consider using osteopathy in the future		Statistical difference	
	Yes (%)	No (%)	Chi Square	p
Gender			0.039	0.843
Female	67.3	32.7		
Male	68.0	32.0		
Age (year)			4.316	0.116
18-34	69.4	30.6		
35-64	68.9	31.1		
65+	59.9	40.1		
Country of Birth			0.727	0.394
Australia	67.0	33.0		
Non-Australia	70.3	29.4		
State			8.183	0.085
New South Wales	68.2	31.8		
Victoria	73.9	26.1		
Queensland	67.5	32.5		
South Australia	56.6	43.4		
Western Australia	63.4	36.6		
Self-reported health status			1.009	0.315
Excellent/very good/good	68.3	31.7		
Fair/poor	63.6	36.4		
Post-secondary education			0.412	0.521
No	68.8	31.2		
Yes	66.7	33.3		
Employment			2.426	0.119
Employed	69.7	30.3		
Unemployed or not in labour force	64.3	35.7		
Private Health Insurance			0.404	0.525
Yes	68.7	31.3		
No	66.6	33.4		
Annual household income			0.218	0.897
<A$20,000	66.6	33.4		
A$20,000-A$40,000	69.2	30.8		
>A$40,000	67.6	32.4		

6.2 Discussion

6.2.1 Chinese Medicine (Acupuncture and Chinese Herbal Medicine)

Until the introduction of Western medicine in China in the 18th century,[156] traditional Chinese medicine (CM) had been the primary form of health care for several thousand years.[157] Even now, Chinese medicine provides 40% of health-care services to the Chinese population. [158] Moreover, during the past several decades, Chinese medicine has become part of the health-care systems of many other Asian regions [159,160] and, more recently, it has been gaining acceptance in most Western countries as a therapeutic alternative to conventional Western medicine.[3,11] In recent years, the integration of Chinese medicine in the conventional medical settings in the Western countries is not uncommon. For example, through an integrative health-care approach, the Center for East-West Medicine within the Department of Medicine at the University of California, Los Angeles believed that Chinese medicine has much to offer to patients with cancer.[161] The increasing popularity of Chinese medicine in Western countries has been accompanied by concerns about its efficacy [162,163] and safety,[164,165] both when used alone and in combination with Western medical treatments.

The information available on the use of Chinese medicine in Australia comes from a landmark study completed in 1996 (and the publication of "Toward a Safer Choice – the Practice of Traditional Chinese Medicine in Australia").[166] It is important to note that the 1996 study was a Chinese medicine national workforce survey for which the CM participants were practitioners and educators, and the focus was on education, the risks and benefits associated with the practice of CM, and regulatory frameworks. The study provided a profile of patients who choose to use CM by asking practitioners to complete a questionnaire for every patient treated on a specific day. Since the study subjects had chosen to use CM, it was not able to

provide information on the prevalence and patterns of CM use in the general population. It also did not provide insightful information on public perceptions of CM. The study was conducted a decade ago and there would seem to have been dramatic changes since then in the public use of CM in Australia.

The use of Chinese medicine, as a defined health-care approach, was not specifically researched in most surveys in Australia and overseas, and consequently there is a lack of nationwide, population-based representative data on Chinese medicine use in Australia. Addressing this deficiency, the current study included the major modalities of Chinese medicine (acupuncture, Chinese herbal medicine, Chinese therapeutic massage, Chinese medicine dietary therapy, Qigong, martial art and Tai Chi) as the totality of CM.

With the above broader definition of CM, the current study presents an estimation of the national and regional prevalence of CM use among the general population in Australia. Nearly one in five adult Australians had used any one form of CM in the 12-month period preceding the survey, and one in nine had visited CM practitioners in the 12-month period. These findings again echo the increasing popularity of all forms of CAM in Australia. There is a lack of accurate information of CM use among the general population in other Western countries. Systematic literature searches (see Chapter 2) have identified only one similar study which investigated such CM information in Western countries. The estimated CM prevalence (17.2% visited CM practitioners in the two-year period) in New York City's Chinatown is higher than the current Australian estimation.[100] However, this New York study was based on randomly selected Chinatown residents.

According to the current national survey, the lowest prevalence of CM use was found in the state of Western Australia, and the lowest prevalence of visits to CM practitioners was found

in Western Australia and South Australia. Specifically, the marked differences between different states, in fact, were for the two major Chinese medicine modalities: acupuncture and Chinese herbal medicine, both in overall use and prevalence of visits to practitioners (see Table 5.1 and Table 5.2). Thus, the current survey confirmed two research hypotheses: 1) certain forms of CAM are more prevalent in some states within Australia and, 2) among all states and territories, Chinese medicine, including acupuncture and CHM, is more prevalent in New South Wales, Victoria and Queensland.

The current study also found acupuncturists were visited more frequently than practitioners of the other 16 forms of CAM. The result is not surprise, as numerous reports have suggested the popularity of acupuncture use both in Australia and overseas. [5,6,17,102,167,168] With the continuing increase in scientific evidence relating to the mechanism and efficacy of acupuncture in treating certain chronic diseases,[169-172] there is little doubt that acupuncture is one of the most popular forms of CAM in Western countries. It is being used by millions of patients, and is practiced by traditional acupuncturists, medical doctors,[95] and by many other health professionals, such as licensed chiropractors and nurses.

The total estimated number of visits to acupuncturists in Australia is substantial in terms of the frequency of visits and the cost to the Australian health system. As mentioned earlier, the Australian national health insurance, Medicare, only covers the cost of acupuncture services provided by registered medical practitioners. Thus, the current estimated millions of acupuncture treatments were mainly borne by the users. The cost implications and non-claimable acupuncture services provided by non-GP acupuncturists meant that in the current study, one in five people who had received acupuncture treatment, received it from GPs only. Secondary analysis of the 1996 Health Insurance Commission data reveals that there were 960, 000 Medicare claims for acupuncture in the 1996-97 financial year, totalling $17.7

million in reimbursements.[167] It is worth noting that these approximately one million claims did not include acupuncture treatments funded by Workers Compensation and the Department of Veterans Affairs, or treatments provided in public hospitals. After 10 years of growing popularity of acupuncture use and practice in Australia, the current estimated 10.16 million visits to acupuncturists, including services provided by GPs and non-GPs, seems to be consistent with the data and reflects the increasing trend of using acupuncture.

The current survey also estimated that the combined total number of practitioner visits by adult Australians for acupuncture, CHM and Chinese therapeutic massage was about 15 million. However, the figure must be interpreted with extreme caution. Based on the nature of Chinese medicine, most CM practitioners practice both acupuncture and Chinese herbal medicine. This is also evidenced by a report of the Chinese Medicine Registration Board of Victoria in June 2006 that, nearly 60% of registered CM practitioners in Victoria are registered for both acupuncture and CHM.[173] In addition, the application of Chinese therapeutic massage in CM practitioners' practice is not unusual.

The current survey found that the characteristics of CM users are similar to the general characteristics of CAM users. However, for both CM users and people who had visited CM practitioners, there was no gender difference or difference in whether or not they had private health insurance. However, the use of acupuncture and Chinese herbal medicine between adults who were born in Australia or overseas was significant. Acupuncture appears have been more accepted than CHM by Australian-born adults. That is, a significantly higher proportion of Australian-born adults used acupuncture, but a significantly lower proportion of Australian-born adults used CHM, when compared to those born overseas. Furthermore, multivariate analyses found those born overseas were 2.3 times more likely to use CHM than the Australian-born residents.

In clinical practice, Chinese medicine treatment is typically highly individualised and based on a holistic philosophy value. It was also expected that people have used acupuncture and CHM for varied health conditions. Thus, the current survey participants mentioned that they used CM for over 30 different health conditions. What the common forms of herbs that are being used for specified health conditions were not researched. However, about three-quarters of acupuncture users used acupuncture for musculoskeletal- related conditions, notably for back pain and shoulder problems.

It is interesting to note that over one third of CHM users actually used CHM for general health and well-being. The individual names of each of the CHM modalities that were used by survey participants are beyond the scope of the current survey. However, there were a large proportion of people who self-used CHM, particularly for general health, rather than specified health conditions. This implies that a number of people may use herbal supplements to improve their health, such as Ginseng to enhance the immune system, which is based on Chinese medicine theory, (to "tonify" the Qi of the body).

Consumers are asserting their rights to choose different modes of health care. As one of the most commonly used forms of CAM, Chinese medicine is used by consumers from diverse cultural backgrounds. Since the publication of a review of Chinese medicine practice in Australia by Bensoussan, Myers *et al.*, [166] CM has experienced significant development. Firstly, the introduction of the statutory regulation of Chinese medicine practitioners in Victoria, enforced by the Victorian Chinese Medicine Registration Act 2000, made Victoria the first state in Australia to register Chinese medicine practitioners. Implementation of Chinese medicine practitioner registration in Victoria is an important initiative for the profession and should lead to enhanced public safety and confidence in Chinese medicine use in Australia. Secondly, it is highly likely that other states will follow Victoria's lead in the

future. For example, the discussion documents on regulatory considerations in the states of New South Wales and Western Australia.[174,175] Thus, the current survey has investigated the impact of the CM Registration Act on public attitudes to Chinese medicine (see regulation section, Chapter 7.1.5). In all, participants suggested that a much more stringent surveillance system in all states and territories is necessary to protect the public from unregistered and unqualified Chinese medicine practitioners.

It is of safety concern that one in six acupuncture users and one in ten CHM users did not receive advice from any source in using these therapeutic treatments. As mentioned above, there are increasing concerns about the adverse events that may relate to the use of CAM therapies and products. This safety concern extends if the CAM use was not supervised or had been used concurrently with other CAM products and/or conventional medicines. The results also suggest an educational approach should be developed by government authorities, such as the TGA and, professional registration bodies, such as the Chinese Medicine Registration Board, to improve the awareness of the potential risks among therapies and products, which are not exclusively related to any individual forms of CAM or conventional medicine.

In summary, the utilisation of different forms of CM in Australia is more prevalent among the general population than had been generally assumed. There are marked differences in the overall CM prevalence among different states. The variations between states are found mainly in the utilisation of acupuncture and Chinese herbal medicine. While more research must to be undertaken to improve the understanding of the mechanism and efficacy of CM, strategic health planning is also necessary to keep consumers and health professionals informed about the safety aspects of different forms of CM.

6.2.2 Chiropractic

Both chiropractic and osteopathy are manipulative therapies, for which practitioners use their hands (as well as modern technology) to diagnose and treat abnormalities of the structure and function of the musculoskeletal system of the body. [176] One does not need to look very far to search for the popular use of such manipulative therapies in different countries. According to previous CAM surveys, at least 11% of Americans,[3] 13% of Canadians,[6] and 16.7% of Australians[11] used chiropractic in a 12-month period. The current survey revealed a similar prevalence: 16.1% of adult Australians used chiropractic.

The current survey found a higher overall CAM prevalence compared to previous regional surveys.[11] Individual prevalence of most forms of CAM estimated in the current survey was also relatively higher than those found previously in Australian regional studies. Perhaps, with the exception of multivitamins, that is, different definitions were used in different surveys and a comparison was not available, the only higher prevalence observed in previous surveys compared to the current survey was the use of chiropractic. In fact, the prevalence of 16.7% estimated in the South Australian study was based on the proportion of people who had visited chiropractors. This was higher than the current national estimation of people who had visited a chiropractor (14.6%). A small proportion of chiropractic users self-administrated, and details were not collected in the current survey. Again, the finding may be reasonably explained by the regional differences among different states. The current survey found that the states of South Australia, Victoria and New South Wales had a higher than national average prevalence of chiropractic use, whereas the prevalence of chiropractic in other states was slightly lower than the national average. The chiropractic prevalence in South Australia (17.0%) in the current survey seems to be consistent with a 2004 South Australia regional estimation (16.7%).[11]

In all states and territories of Australia, chiropractic is subject to practitioner registration. Despite the evidence of high prevalence of use in Australia,[11] little is known about who the chiropractic users are in Australia, why they use it, and the perceptions and consequences of chiropractic treatment. On the other hand, these matters were investigated in the US,[177] Canada,[178] Denmark,[179,180] the Netherlands,[181] and in Sweden.[182] Nevertheless, the profile of middle-aged Australian women who consult a chiropractor or osteopath has been published recently, based on a large-scale longitudinal study on women's health.[183] It revealed that women living in non-urban areas and women with a lower level of education were more likely to use chiropractic or osteopathy. Such findings were not supported by the current survey. However, the current survey suggests Australian-born adults are significantly more likely to use chiropractic than those born overseas (odds ratio=2.07).

Similar to the mean number (9.8) of chiropractor visits per annum in the US in 1996,[3] the current survey also reveals that chiropractors are the second most-frequently visit of all forms of CAM practitioners. The average of 8.4 visits per year per chiropractic user represents over 19 million visits by all adult Australians. As noted, the costs related to chiropractor visits are still mainly borne by consumers. In addition to consultation and treatment costs, approximately one in eight chiropractic users indicated that they also spent money on books or equipment related to chiropractic treatment. Thus, the economic burden borne by chiropractic users in Australia seems substantial. It is interesting to note, based on one year health service records from over 2,000 low-back pain patients, a US study suggested that the mean costs associated with chiropractic patients were significantly higher than those patients treated by medical doctors.[184]

The use of chiropractic for back pain and back-related problems is well documented in the literature.[177-179,181] The current survey further confirms such a finding among the Australian

general public. Nearly two thirds of chiropractic use was for back pain or back-related problems. Thus, multivariate analysis estimated that the chance of Australian people using chiropractic was about 3.5 times higher among those with back problems, compared to those without back problems. Furthermore, the use of chiropractic treatment for a specific health condition, rather than for the musculoskeletal system, is not common in the current survey. Of 176 chiropractic users, only one person used it for a gynaecological condition. In contrast, a much higher prevalence of non-musculoskeletal complaints in chiropractic practice was found in a multinational study, which accounted for about one in ten (10.3%) of all chief complaints.[185]

A previous survey found similar proportions of Australian adults with lower back pain had consulted GPs (22.4%) or chiropractor (19.3%), which was considerably higher than the proportion of consultations with physiotherapists (13.4%).[186] Thus, the researchers further suggested that visits to chiropractors may have a greater "market share" in Australia, while due to historical and other reasons, physiotherapists have been much more commonly accepted as a form of allied health in the national health system in Australia. Nevertheless, the Australian Government is increasing the exclusive ancillary position of chiropractic, including osteopathy treatment, the Australian national health system (Medicare) now provides limited rebates for people with chronic conditions and complex care needs.[187]

In the current survey, after receiving chiropractic treatment, almost three quarters of the users considered it was very helpful, and a similar proportion of users also agreed chiropractic had relieved various forms of pain. Although nearly half of all users considered chiropractic had also improved their general health and well-being, detailed non-musculoskeletal responses to chiropractic treatment have not been investigated in the current study. A multinational survey of chiropractic patients in seven countries estimated that positive non-musculoskeletal

reactions to chiropractic were not rare, with an improvement in breathing (27%), digestion (26%) and circulation (21%) being most common.[188] The specific benefits of chiropractic are necessary in future chiropractic research in Australia.

It is worth mentioning that one in five chiropractic users received advice from their medical doctors to use chiropractic. In past decades, many efforts have been made to integrate conventional medicine and CAM therapies.[95,189,190] Many health professionals are now working in a multi-disciplinary environment. For example, one in 10 chiropractors in the US is practicing as a member of a multi-disciplinary team that includes medical doctors[191] and, most chiropractors had received a referral from medical doctors in the US.[192] Such information is limited in Australia, so future studies may concentrate on a strategy to improve the communication between these two professions (i.e. chiropractor and GP). Follow-up studies should reveal the barriers and motivations of patient referral.

A moderate proportion of users (27.2%) did not receive any advice in seeking chiropractic care. This seems to be consistent with the fact that most survey participants considered chiropractic treatment to be safe and the adverse event rate reported by all users was less than three per 1,000 consultations. Limited Australian literature provides information on concerns about adverse events and safety issues relating to chiropractic. It has been suggested that adverse events were more commonly reported if a practitioner applied cervical spine manipulation rather than mobilisation.[193] On the other hand, a previous study revealed that some people experienced dizziness, nausea or other "abnormal reaction" after treatment.[194] In addition, although rare, serious adverse events such as stroke and vertebral artery dissection after cervical spine manipulation continue to be reported.[195] In the current survey, a major back injury, due to chiropractic treatment provided without performing an x-ray, was reported by one of the participants. Chiropractic practitioners should be alerted in terms of precautions.

6.2.3 Osteopathy

As noted, osteopathy is one of the major forms of manipulative CAM therapies. More popularly, a study in Scotland found 12% osteopath use in 1999.[196] A 1998 UK study found a 4.3% use of osteopathy in a 12-month period, and a 13% lifetime use.[5] The use of osteopathy was found to be not very common in Canada (less than 4%).[6] According to two UK studies,[5,17] the prevalence of osteopathy in the UK was higher than the prevalence of chiropractic. The proportion of Australians who used osteopathy treatment, however, is far less than chiropractic, as evidenced in previous Australian regional CAM surveys (0.4% visited osteopaths and 16.7% visited chiropractors),[10,11] and the current survey shows 4.6% visited osteopaths compared to 16.1% who visited chiropractors).

According to the second Osteopathic Survey of Health Care in the US in 2000, the prevalence of the use of osteopathy then was 7%, with a lifetime use of 16%.[197] It is important to note that osteopathic medicine was not included as a form of CAM in the US surveys.[1,3,4] Practitioners of osteopathic medicine in the US are fully trained as doctors of osteopathic medicine (D.O.). They are licensed medical physicians with the same professional level as other physicians in the US health system.[116] According to the United States Code of Federal Regulations, the practice of osteopathic medicine is included in the definition of allopathic family medicine (commonly known as Western medicine).[198] Thus, osteopathy practitioners in the US can do anything that a conventional medical doctor can do, in all 50 states in the US.[199] For historical and other reasons, osteopathy treatment may not be considered as a form of CAM in the US.[200] However, it is still classified under one of the five NCCAM domains of CAM (i.e. the umbrella of manipulative and body-based practices).[36] In most countries, including Australia, osteopathy is commonly included as part of the CAM definition. This definition is used in the current study.

Unlike the small variations in the use of chiropractic between different states in Australia, the prevalence of osteopathy in different states seemed to vary significantly. The proportion of adults in the states of South Australia and Western Australia who used osteopathy was lowest among the other states. This finding, however, must be interpreted with caution, due to the small number of survey participants who had used osteopathy across all states.

Osteopathy, chiropractic and other manipulative therapies, including certain allied health professions (e.g. physiotherapy), share some common functional techniques, such as mobilisation. The current survey revealed that most commonly, about two thirds of osteopathy users considered the forms of osteopathy treatment they received were massage-like. In addition, at least half of osteopathy users also described the treatment as mobilisation, "popping of joints", strength, or cranial therapy. Thus, a variety of the techniques used by osteopaths are highly associated with techniques that deal with musculoskeletal systems. A US national survey with osteopathy practitioners revealed that the of majority practitioners used the high-velocity thrust technique, and, together with the soft tissue technique, these were the most frequently used.[201] However, high-velocity thrust, was not mentioned by osteopathy users in the current study. This may be due partially to the technical term, known by the practitioners rather than patients.

Confirming a common finding,[183,202] the current survey also found that about half of the osteopathy users saw osteopaths for the purpose of back pain or back-related problems. The current survey estimated that those who had visited a GP for back problems were more than four times more likely to use osteopathy. On the other hand, among all demographic factors that related to osteopathy use, it is of interest to note the lowest prevalence was among those with a middle range of household income (A$20,000-A$40,000). However, such information

was not commonly reported in previous CAM studies, including the noted CAM study in the US,[197] and an Australian osteopathic study.[183]

Similar to the other CAM therapies, the costs related to osteopathy use in Australia are still borne mainly by the consumers. Very little research has been published on the economic aspects of osteopathy therapy, compared to such literature on acupuncture and chiropractic. Despite the legal status of osteopathic practitioners who form part of the managed health-care system in the US, it was suggested that studies on the cost-effectiveness of osteopathy are not consistent with conventional medical literature.[203]

Osteopathy users in a national survey in the US considered osteopathy was more beneficial for musculoskeletal conditions than other internal conditions.[204] The overall satisfaction of patients who attended ambulatory osteopathy clinics was found to be significantly associated with the relief of pain or discomfort.[205] Consistently, over three-quarters of osteopathy users in the current survey considered osteopathy to be very helpful in terms of relieving pain. The surveyed osteopathy users also mentioned the usefulness of improving normal daily activities and general well-being. However, the specific benefits after osteopathy treatment are poorly understood in Australia.

In the current survey, a few osteopathy users reported they had experienced discomfort after treatment, such as pain, soreness and tiredness. As noted above, such reports deviate from the commonly discussed adverse events related to manipulative therapies. Issues relating to the safety of users are important in promoting the use of osteopathy treatment among the general population, and should be properly addressed in future integrative medical care in Australia. Again, very little literature is available.

Similar to the overall use of CAM and the use of chiropractic and acupuncture in the current survey, the most common referral channel for using osteopathy was from a user's friends or relatives. Only one in five osteopathy users had received advice from other CAM practitioners and about one in six had received advice from a GP. These data were self-reported by the survey participants. The referral pattern between osteopathy practitioners and GPs, as well as between osteopaths and other CAM practitioners, is unknown in the Australian health context. Such referral information to osteopaths, as well as to other CAM practitioners is significant, in terms of the implications for health resources planning and of safety interest to consumers, practitioners and the government.

CHAPTER 7. FACTORS RELATED TO CAM USE

In this Chapter, matters related to CAM use, such as rationale for using CAM, benefits and risks related to CAM use, concurrent use of CAM and Western medicine, health insurance coverage of CAM and, regulatory issues on CAM use are presented.

7.1 Results

7.1.1 Rationale for CAM Use

All CAM users were asked to respond to seven pre-defined statements about complementary medicine and its comparison with Western medicine. These statements were based on previous studies on the rationale for CAM use. Survey respondents agreed/disagreed with such statements, or provided a neutral answer ("no comment").

Nearly half (44.1%) of the CAM users agreed that Western medicine would improve their medical conditions but would not cure them. This proportion was not significantly different among different socio-demographic groups of people. However, it is not surprising that those users with a relatively poor health condition tended to agree more with this statement than those in better health (55.3% vs. 42.0%, χ^2=9.76, p=0.008).

Nearly one in nine users (11.5%) considered Western medicine would not improve their medical conditions, although over three quarters (75.4%) disagreed with this. Among those who considered Western medicine would not improve their medical conditions, there was no difference between those who had visited a medical doctor in the 12-month preceding the survey and those who had not visited one (11.1% vs. 13.3%, χ^2=0.983, p=0.612).

Of particular concern is the proportion (24.8%) of participants who considered the services provided by their GPs as generally unsatisfactory. Typically, a relatively higher proportion was reported by those without post-secondary education (28.9% vs. 22.0%, χ^2=7.662, p=0.022), those unemployed (30.8% vs. 22.0%, χ^2=8.808, p=0.012), those having a lower income range (34.3%, 32.4% and 19.4%, respectively, among people with incomes of less than A$20,000, between A$20,000 and A$40,000; and higher than A$40,000, χ^2=17.307, p=0.002), those without private health insurance (32.2% vs. 19.9%, χ^2=15.193, p=0.001), and those with a poor health condition (35.9% vs. 22.8%, χ^2=9.366, p=0.009).

Over half of all CAM users (56.4%) considered that Western medicine had a relatively high risk of side effects, while over three quarters (76.0%) considered CAM to be relatively safe. On the other hand, among all users, approximately 5.4% considered neither Western medicine nor CAM as safe. There was no significant difference among gender and age groups with respect to these safety statements. However, fewer old people agreed that CAM is relatively safe, while a relatively high proportion of them did not respond to this statement ($p<0.05$).

Over three quarters (75.9%) and over four fifths (80.5%) of CAM users considered that CAM provides a more holistic approach to health or is a more natural approach to treatment. Most significantly, the proportions of females or of younger adults who agreed with both these statements were much higher than males or older people. For example, 83% of females agreed that CAM is a holistic approach, while only 67.4% of males agreed with this statement ($p<0.05$). In total, 3.6% disagreed that CAM provides more holistic care or a natural approach to treatment, with the majority of them (83.2%) being male participants.

7.1.2 Regression Analyses on CAM Use

In Chapters 4.1.4.2 and 4.1.5.3, cross-tabulation analyses and tests of significance were carried out with each of the variables considered one at a time, in order to identify the general pattern of the overall association of participants' characteristics and their CAM utilisation status. Using the same approach (see Chapter 3.6.4.3), multivariate regression analyses on CAM use and on visits to CAM practitioners were conducted.

7.1.2.1 Variables that Related to the Use of CAM

In the initial step, the inter-correlations of potential predictor variables were examined (Appendix G11). In general, the inter-correlations of these variables are not highly correlated with each other, and thus fulfil the general requirement of avoiding collinearity prior to regression analysis. Similarly, the inter-correlations among other blocks of predictor variables and CAM use were also examined, with similar findings. Secondly, guided by the findings of the characteristics associated with CAM use (see Table 4.5), a bivariate analysis of all predictor variables and CAM use was conducted by cross-tabulation chi square tests (Table 7.1). It shows that 11 variables (where $p<0.05$) are significantly related to CAM use. This will assist the development of the regression model. Detailed statistics are presented in Appendix G12.

The development of the regression model proceeded by entering stepwise (based on Wald statistics), four blocks of predictor variables (where significant at the bivariate level): block one was demographic factors; block two, health factors; block three, external factors and block four, the 18 specific health conditions for which participants had visited GPs (Table 7.1). The best-fit significant results of the multivariate analysis are presented in Table 7.2.

After all demographic variables were statistically controlled, it is apparent that gender, age and educational background are significant predictors for CAM use. Female participants were 1.9 (95% CI: 1.4 to 2.6) times more likely to use CAM than male participants. Similarly, the odds of those aged 18-34 being CAM users was 1.8 (95% CI: 1.1 to 3.0) times higher than those aged 65 and older. In addition, people with post-secondary education were 2.0 (95% CI: 1.5 to 2.7) times more likely to use CAM than those without post-secondary education (Table 7.2).

After entering the second block of predictor variables, the above noted demographic results remained significant (Table 7.2). Additional predictor variables were estimated. Those participants who had consulted a GP in the preceding 12 months were 1.7 (95% CI: 1.5 to 2.8) times more likely to use CAM than those who had not visited a GP in the preceding 12 months. Consistent with this, those participants who had consulted a GP four or more times in the preceding 12 months were also 1.4 (95% CI: 1.0 to 2.1) times higher than those had visited a GP less than four times. The percentage of accurate classification (PAC) increased slightly from 70.1 to 70.7.

The results in block three further suggest that those agreed with the statement of "insurance coverage of CAM influences the decision to purchase health insurance" were 3.0 (95% CI: 2.2 to 4.2) times more likely to use CAM than those who did not agree with the statement, after all other predictor variables were statistically controlled. The Omnibus Tests, which provided an indication of how well the model executes, increased to a chi square value of 102.823 (df=7, $p<0.0001$). The percentage of accurate classification further increased to 72.0 (Table 7.2).

Table 7.1 Bivariate analyses of predictor variables for CAM use

Predictors	χ^2 (degree of freedom)	p value
Demographic factors (block one)		
Gender (female=0, male=1)	15.119 (1)	0.0001
Age group (18-34 year old, 35-64, 65+)	17.494 (2)	0.0002
Residential area (New South Wales, Victoria, Queensland, South Australia, Western Australia)	4.604 (4)	0.33
Education (post-secondary education: yes/no)	20.811 (1)	<0.0001
Employment (yes/no)	10.330 (1)	0.001
Income (<A$20,000, A$20,000-A$40,000, >A$40,000)	10.758 (2)	0.005
Country of birth (Australia=1, overseas=0)	2.315 (1)	0.128
Health factors (block two)		
Self-rating health status (excellent/very good/good, fair/poor)	0.659 (1)	0.417
Visited a GP in past 12 months (yes/no)	10.468 (1)	0.001
Visited GP 4 or more times in past 12 months (yes/no)	6.434 (1)	0.011
External factors (block three)		
Covered by private health insurance (yes/no)	6.458 (1)	0.011
Coverage of CAM influences insurance purchase (yes/no)	84.285 (1)	<0.0001
Believe CAM should be regulated as rigorously as Western medicine (yes/no)	1.987 (1)	0.159
Health conditions (block four) Visited GP for 18 specific health problems (dichotomous measures: yes/no):		
1. Health check-up	2.657 (1)	0.103
2. Arthritis	0.451 (1)	0.502
3. Asthma	0.001 (1)	0.980
4. Back problems	2.358 (1)	0.125
5. Cancer	2.804 (1)	0.094
6. Cold/flu/fever	0.491 (1)	0.484
7. Depression	1.070 (1)	0.301
8. Diabetes	1.867 (1)	0.172
9. Gastrointestinal	3.551 (1)	0.060
10. Gynaecologic	0.349 (1)	0.555
11. High blood pressure	1.906 (1)	0.167
12. High cholesterol	0.003 (1)	0.986
13. Heart problems	0.106 (1)	0.744
14. Lung problems	4.243 (1)	0.039
15. Other pains	1.157 (1)	0.282
16. Pregnancy	1.746 (1)	0.186
17. Skin problems	0.004 (1)	0.951
18. Trauma/injury	5.477 (1)	0.019

Table 7.2 Multivariate analysis of predictor variables for CAM use

Predictors	Block 1, odds ratio & (95% CI)	Block 2, odds ratio & (95% CI)	Block 3, odds ratio & (95% CI)	Block 4
Gender				N/S
Male	1.0	1.0	1.0	
Female	1.885 (1.382–2.570)**	1.678 (1.221–2.305)**	1.612 (1.162–2.235)**	
Age (year)				
18-34	1.0	1.0	1.0	
35-64	0.726 (0.507–1.039)	0.658 (0.456–0.950)*	0.718 (0.492–1.049)	
65+	0.545 (0.336–0.884)*	0.433 (0.261–0.716)**	0.525 (0.312–0.883)*	
Post-secondary education				
No	1.0	1.0	1.0	
Yes	1.995 (1.465–2.717)**	2.058 (1.504–2.816)**	1.898 (1.372–2.618)*	
Consulted GP in the past 12 months				
No		1.0	1.0	
Yes		1.686 (1.118–2.541)*	1.586 (1.037–2.427)*	
Consulted GP ≥4 times in the past 12 months				
No		1.0	1.0	
Yes		1.447 (1.009–2.075)*	1.590 (1.096–2.306)*	
Coverage of CAM influences insurance purchase				
No			1.0	
Yes			2.991 (2.155–4.150)**	
Omnibus Tests of Model Coefficients				
Chi square (degree of freedom, p value)	42.142 (4, <0.0001)	57.912 (6, <0.0001)	102.823 (7, <0.0001)	
Percentage accurate in classification	70.1	70.7	72.0	

* p<0.05; ** p<0.01; N/S: no significant variable identified; CI: confidence interval.

7.1.2.2 Variables that Related to Visiting CAM Practitioners

As shown in Table 7.3, 12 predictor variables are significantly related to visiting CAM practitioners at a bivariate level. Table 7.4 presents the multivariate analysis results. Similar to the findings on CAM use, for visiting CAM practitioners, it was shown that, in addition to gender and educational background, household income ranges and participants' country of birth are significant predictors for CAM practitioner visits. Among these predictor variables, household income appeared to be the most significant factor. Participants with an income range between A$20,000 and A$40,000 were 2.0 (95% CI: 1.2 to 3.2) times more likely to use CAM than participants with an income of less than A$20,000. In addition, the odds of those having an income higher than A$40,000 being CAM users was 2.3 (95% CI: 1.5 to 3.5) times higher than those with an income of less than A$20,000.

Again, similar to the findings on CAM users, after entering block 2 and block 3 variables, two variables were found to contribute significantly to the model for visits to CAM practitioners: consulted a GP in the past 12 months and how insurance coverage of CAM influences insurance purchase. Among demographic, health and external factors, the influence of insurance coverage of CAM on the purchase of health insurance was the most significant factor associated with visiting a CAM practitioner. Those who believed that insurance coverage of CAM would influence their purchase of health insurance were 3.5 (95% CI: 2.6 to 4.7) times more likely to visit CAM practitioners than those without such a belief.

The above regression model (Table 7.4, block four) also suggested that two additional factors were associated with CAM practitioner visits. People who had consulted a GP for back problems or for trauma/injury problems were 2.0 to 2.6 times more likely to have visited CAM practitioners than people with other specific health conditions.

Table 7.3 Bivariate analyses of predictor variables for CAM practitioner visits

Predictors	χ^2 (degree of freedom)	p-value
Demographic factors (block one)		
Gender (female=0, male=1)	11.510 (1)	0.001
Age group (18-34 year old, 35-64, 65+)	8.749 (2)	0.013
Residential area (New South Wales, Victoria, Queensland, South Australia Western Australia)	2.497 (4)	0.645
Education (post-secondary education: yes/no)	24.114 (1)	<0.0001
Employment (yes/no)	3.700 (1)	0.054
Income (<A$20,000, A$20,000-A$40,000, >A$40,000)	17.836 (2)	0.0001
Country of birth (Australia=1, overseas=0)	7.467 (1)	0.006
Health factors (block two)		
Self-rating health status (excellent/very good/good, fair/poor)	0.515 (1)	0.473
Visited a GP in past 12 months (yes/no)	17.077 (1)	<0.0001
Visited GP 4 or more times in past 12 months (yes/no)	7.712 (1)	0.005
External factors (block three)		
Covered by private health insurance (yes/no)	13.616 (1)	0.0002
Coverage of CAM influences insurance purchase (yes/no)	101.357 (1)	<0.0001
Believe CAM should be regulated as rigorously as Western medicine (yes/no)	2.313 (1)	0.128
Health conditions (block four) Visited GP for 18 specific health problems (dichotomous measures: yes/no):		
1. Health check-up	0.394 (1)	0.530
2. Arthritis	0.131 (1)	0.718
3. Asthma	0.039 (1)	0.844
4. Back problems	8.683 (1)	0.003
5. Cancer	6.468 (1)	0.011
6. Cold/flu/fever	0.161 (1)	0.688
7. Depression	0.959 (1)	0.327
8. Diabetes	0.007 (1)	0.935
9. Gastrointestinal	0.289 (1)	0.591
10. Gynaecologic	0.007 (1)	0.931
11. High blood pressure	2.935 (1)	0.087
12. High cholesterol	1.086 (1)	0.297
13. Heart problems	0.000 (1)	0.995
14. Lung problems	0.521 (1)	0.470
15. Other pains	0.007 (1)	0.935
16. Pregnancy	1.481 (1)	0.224
17. Skin problems	0.088 (1)	0.770
18. Trauma/injury	11.761 (1)	0.001

Table 7.4 Multivariate analyses of predictor variables for CAM practitioner visits

Predictors		Block 1, odds ratio & (95% CI)	Block 2, odds ratio & (95% CI)	Block 3, odds ratio & (95% CI)	Block 4, odds ratio & (95% CI)
Gender	Male	1.0	1.0	1.0	1.0
	Female	1.82 (1.36–2.44)**	1.67 (1.25–2.25)**	1.62 (1.20–2.21)**	1.67 (1.23–2.29)**
Post-secondary education	No	1.0	1.0	1.0	1.0
	Yes	1.84 (1.36–2.49)**	1.85 (1.37–2.51)**	1.70 (1.24–2.40)**	1.72 (1.25–2.36)**
Income	<A$20,000	1.0	1.0	1.0	1.0
	A$20,000-A$40,000	1.98 (1.23–3.18)**	2.03 (1.26–3.27)**	1.80 (1.09–2.96)**	1.77 (1.08–2.93)*
	>A$40,000	2.31 (1.53–3.50)**	2.41 (1.59–3.67)**	2.21 (1.43–3.41)**	2.21 (1.42–3.42)**
Country of birth	Overseas	1.0	1.0	1.0	1.0
	Australia	1.53 (1.08–2.16)*	1.51 (1.06–2.14)*	1.67 (1.16–2.42)**	1.68 (1.16–2.44)**
Consulted GP in the past 12 months	No		1.0	1.0	1.0
	Yes		1.97 (1.34–2.90)**	1.99 (1.33–2.97)**	1.82 (1.21–2.74)**
Coverage of CAM influences insurance purchase	No			1.0	1.0
	Yes			3.50 (2.58–4.74)**	3.52 (2.59–4.79)**
Back problems	No				1.0
	Yes				2.61 (1.05–6.50)*
Trauma/injury	No				1.0
	Yes				2.05 (1.02–4.12)*
Omnibus Tests of Model Coefficients					
Chi square (degree of freedom, p value)		59.12 (5, <0.0001)	71.43 (6, <0.0001)	140.00 (7, <0.0001)	149.11 (9, <0.0001)
Percentage accurate in classification		60.1	62.4	67.5	68.1

* p<0.05; ** p<0.01; CI: confidence interval

7.1.3 Use of CAM and Western Medicine

7.1.3.1 Use of Western Medicine

Slightly over 80.8% of respondents reported that they had visited a general practitioner (GP) or medical specialist in the 12 months prior to the survey (hereafter, visits to a GP). The mean number of visits to a GP per respondents in this survey was 5.53 times in the 12-month period. When this figure was projected to the whole Australian adult population, the total estimated visits to GPs were 69.29 million times.

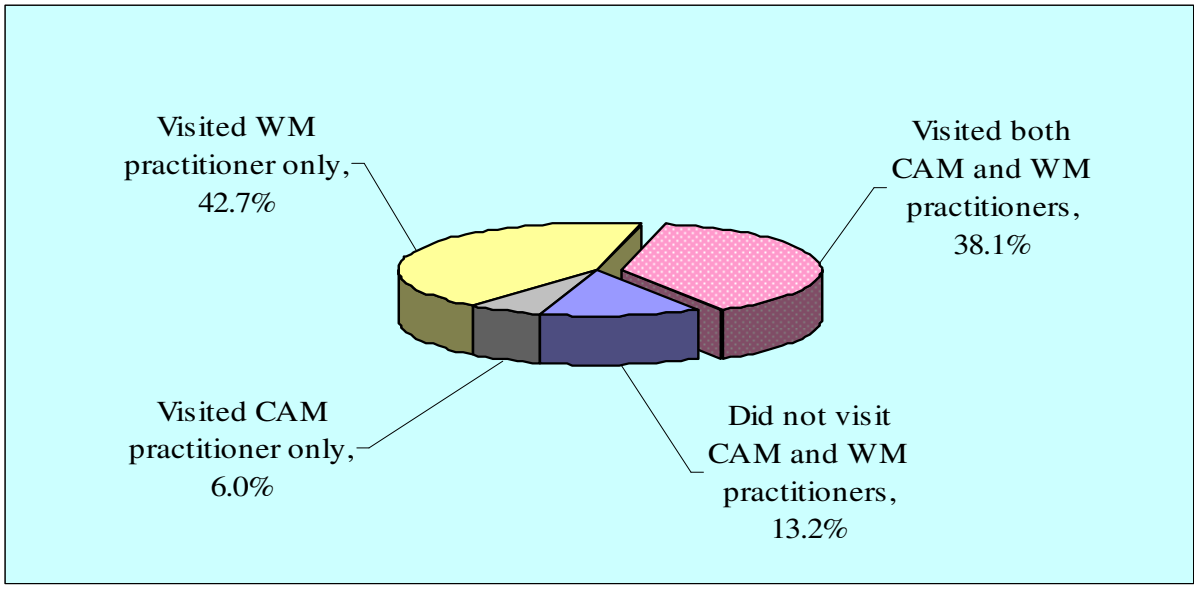
Among these respondents who had visited a GP, almost one fifth (19.1%) consulted a GP only for a general health check-up, to receive a prescription or immunization and/or, for travel or work-related medical examination purposes. Over six in ten respondents (60.1%) visited for a single medical problem and 20.8% for at least two medical problems. The most common medical problems for which respondents visited a GP were cold/flu or virus infection (12.2% of total visits), (high) blood pressure (10.3%), injury and trauma (6.6%), arthritis and gout (5.4%), and heart problems (5.1%).

7.1.3.2 Concurrent Use of CAM and Western Medicine

Almost two out of five participants (38.1%) had visited both a medical doctor and a CAM practitioner in the preceding 12-month period, whereas 42.7% had visited a medical doctor only and 6% had visited a CAM practitioner only. The remaining 13.2% of participants had not visited a medical doctor or a CAM practitioner (Figure 7.1). A relatively high proportion of people who had visited a medical doctor for back problems or trauma/injury had also visited a CAM practitioner (71% and 66% respectively).

Among all participants, those who had visited a medical doctor in the preceding 12 months were more likely to have also used any one of the 17 forms of CAM (71.1%) than those who had not visited a medical doctor (59.5%, χ^2=10.468, p=0.001). Consistently, those participants who had visited a medical doctor in the preceding 12 months were more likely to have also visited a CAM practitioner (47.2%) than those who had not visited a medical doctor (31.2%, χ^2=17.077, p<0.001).

Figure 7.1 Visits to CAM and Western medical practitioners

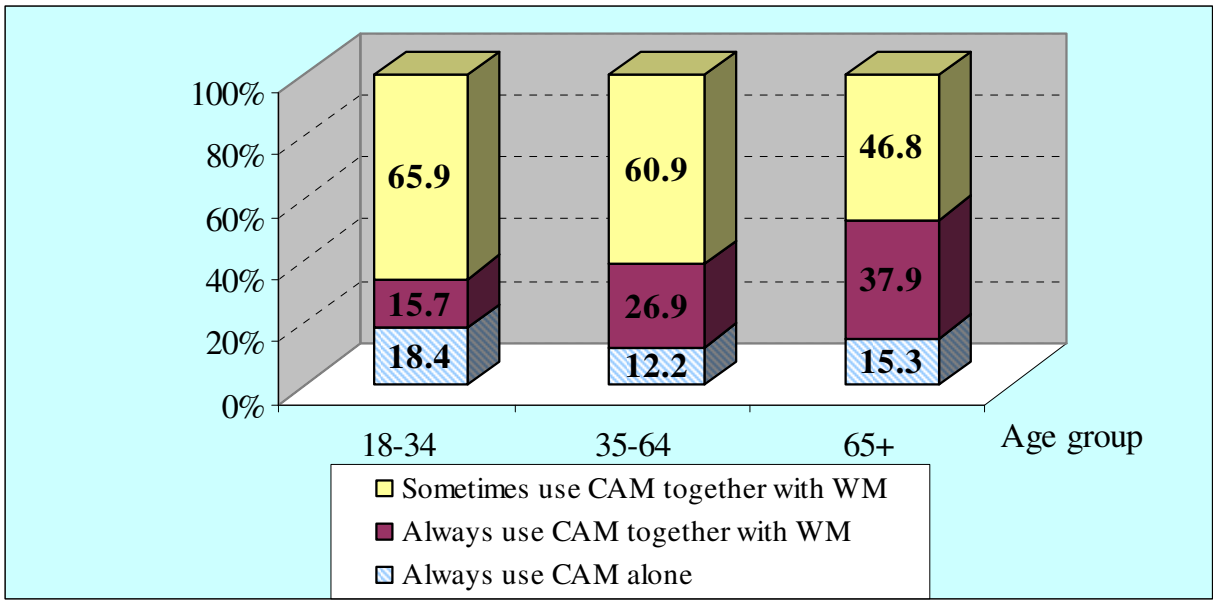


WM: Western medicine; CAM: complementary and alternative medicine

With respect to concurrent use, all identified CAM users were asked to respond to whether they had always used CAM alone, always used it together with Western medicine or sometimes used the two together. Approximately one in five (21.8%) CAM users had always used CAM and Western medicine together, only one in eight (13.2%) CAM users always used CAM alone, and over half (54.1%) had used CAM sometimes together with Western medicine (the remaining 10.9% did not respond to this question). The total proportion of CAM users who mentioned that they sometimes or always used CAM and Western medicine together (75.9%) was similar to the above noted proportion within CAM users who had also visited a medical practitioner in the preceding 12 months (71.1%).

Cross-tabulation analyses further revealed that the most significant difference of always using CAM together with Western medicine had been found between different age groups (Figure 7.2). That is, a relatively higher proportion (37.9%) of those aged 65 or older had always concurrently used both CAM and Western medicine than those younger groups (χ^2=22.079, p<0.001).

Figure 7.2 Concurrent use of CAM and Western medicine among different age groups



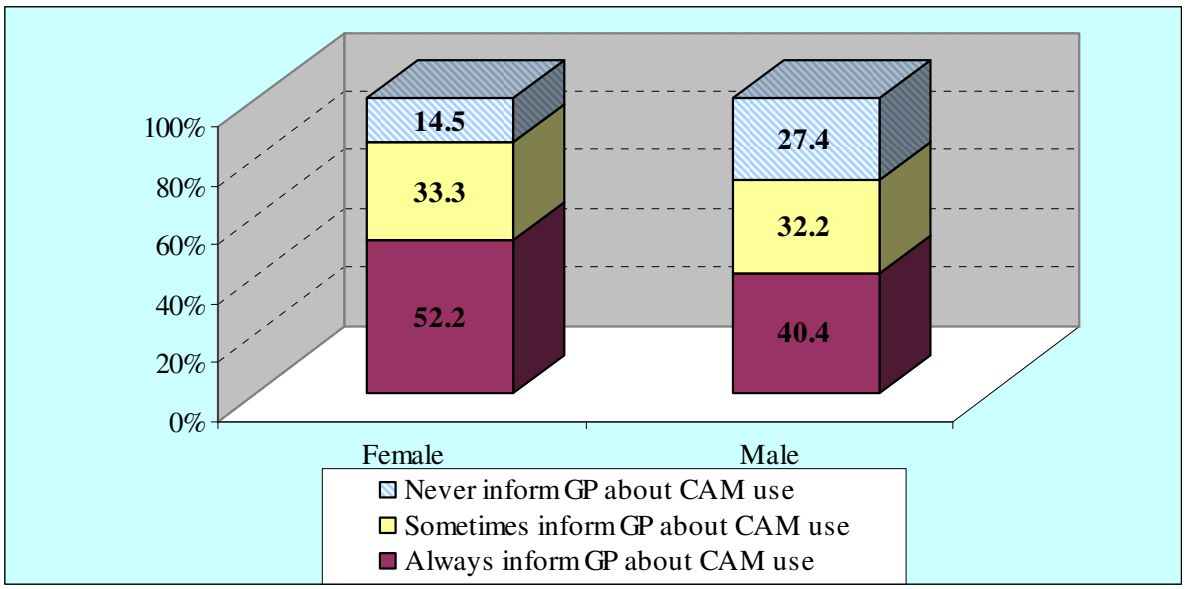
Note: proportions were calculated excluding people who did not respond to this question.

7.1.3.3 Communication between Consumers and Practitioners

Among the 865 participants who had visited a medical doctor in the preceding 12 months, almost three quarters (71.2%) were CAM users. Of these, less than half (44.9%) indicated that they always informed their medical doctors about their use of CAM, but almost one in five (17.9%) participants never informed their medical doctors about their CAM usage. An additional one third (30.3%) had sometimes informed their GPs.

Significantly, female CAM users were more likely to discuss their CAM use with their GPs than male users were (52.2% vs. 40.4%), whereas a relatively higher proportion (27.4%) of male users than female users (14.5%) had never done this (χ^2=18.279, p<0.001, Figure 7.3). Perhaps surprisingly, users who were unemployed at the time of the survey were more likely to always inform their GPs than those who were employed (55.0% vs. 42.9%, χ^2=8.793, p=0.012). Surprising also, a higher proportion (59.2%) of older users (aged 65 and older) always informed their GPs than those in the younger age groups (35-64 years, 49.4% informed a GP; 18-34 years, 37.8% informed their GPs, χ^2=18.870, p=0.001).

Figure 7.3 Gender difference in informing general practitioners about CAM use



Note: proportions were calculated excluding people who did not respond to this question.

The most common reasons given by the surveyed CAM users for discussing their use of CAM with their medical doctors were that they considered it necessary to do so (66.9%). Nearly one quarter (23.3%) of the CAM users had received advice from their GPs to use CAM, whereas an additional 13.9% informed their GPs because their GPs had asked about their CAM use. Interestingly, the only significant difference in the proportions of informing GPs among different socio-demographic groups was in users' employment status. A relatively higher proportion of those employed (16.0%) than those unemployed (9.4%) had informed their GPs because their GPs had asked them about their CAM use (χ^2=4.093, p=0.043).

The most common reasons given by the CAM users in the survey for not discussing their use of CAM with their medical doctors were that they did not consider it necessary to do so (58.1%), and that they had not been asked by their doctors (22.4%). In addition, 10.1% of the CAM users considered that their GPs may not have been happy to know that their patients had used CAM. Nearly one in ten CAM users (9.6%) further responded that they had just forgotten to mention their CAM use to their GPs. Furthermore, there were two users whose GPs had advised them not to use CAM; the specific reason for this was not collected.

Not surprisingly, male users (70.8%) did not consider it necessary to inform their GPs compared with (47.8%, χ^2=6.926, p=0.008) female users. Not unexpectedly, more female CAM users (21.3% compared to 3.2%, χ^2=10.69, p=0.001, of male users) were concerned about their GPs being unhappy if they knew about their patients' use of CAM. The view that GPs may not be happy was more common among those without post-secondary education (17.1%) than those with post-secondary education (5.8%, χ^2=4.228, p=0.040).

7.1.4 Health Insurance and the Use of CAM

7.1.4.1 National Health Insurance Coverage of CAM

Currently, the national health care system (Medicare) in Australia does not cover the costs related to nearly all CAM products and practitioners, with the exception of acupuncture treatment provided by a registered medical doctor and very limited allied health services (including chiropractic and osteopathy treatments) for patients with chronic diseases. All survey participants were asked about their perceptions towards the possible extension of Medicare coverage to the four common provider-based and regulated CAM therapies: acupuncture, Chinese herbal medicine, chiropractic and osteopathy. Participants were informed prior to the questions that "realising there is limited amount available to fund Medicare, do you think …?". This was an effort to minimise the possible bias of "more free coverage is always welcomed", as commented on by some researchers prior to the survey.

Visits to Acupuncturists

Over three quarters (82.4%) acupuncture users responded that Medicare should cover acupuncture treatment provided by acupuncturists, in addition to that provided by GPs. The view was also supported by a large proportion of survey participants (71.4%). Of this number, 11.9% said this was conditional on the acupuncturist being registered with the relevant government body. Cross-tabulation further revealed that the biggest variation in proportions of participants responding affirmatively to this question was regional difference. In general, South Australia residents did not consider that Medicare coverage be extended to acupuncture (60.3% compared to 76.1% in New South Wales, 79.7% in Victoria, 84.5% in Queensland, 78.5% in Western Australia, χ^2=18.898, p=0.001). However, among acupuncture users, this

regional difference was not found (χ^2=3.479, p=0.481). No other additional marked difference was found in other demographic information.

Visits to Chinese Herbal Medicine Practitioners

With respect to Medicare coverage of Chinese herbal medicine (CHM) practitioners, over half of participants (57.4%) considered Medicare should also cover visits to CHM practitioners; 8.4% of this number believed this should be conditional on the CHM practitioner being registered with the relevant government body. It is worth noting that the Medicare coverage to CHM practitioners was demanded by vast majority of the current CHM users (90.2%). Cross-tabulation analysis further revealed that several demographic characteristics were significantly related to the participants' response to this question. Notably, those (69.1%) without post-secondary education were more likely to suggest coverage than those with post-secondary education (58.7%, χ^2=11.103, p=0.001). In contrast, the proportion (57.6%) of participants with household income more than A$40,000 who expressed a positive coverage was less than the proportion of those with a lower household income (A$20,000-A$40,000, 71.5%, and <A$20,000, 67.0%, χ^2=12.83, p=0.002).

Among different age and gender groups, the proportions of participants responding to the question on national health insurance coverage of CHM were significantly different. Female adults (66.1%) were more in favour of extending the coverage to CHM than male adults (60.0%, χ^2=3.856, p=0.05). In contrast, the younger adults (aged 18-34, 56.0%) were less in favour of extending the coverage to CHM than the older people (35-64, 66.0% and 65+, 67.6%, χ^2=9.830, p=0.007). Among CHM users, a marked difference was not found, or the sample size was too small, to draw a significance finding on cross-tabulation analysis.

Visits to Chiropractors

As with acupuncture, a relatively high proportion of participants considered it necessary for chiropractic treatment to be covered by Medicare (73.6% among all participants, or 87.1% among current chiropractic users). As could be expected, a higher proportion of positive suggestions came from those without private health insurance coverage (83.2% compared to those with private health insurance, 73.9%, χ^2=12.287, p=0.0005), and among those with a poor or fair health condition (84.8% compared to those with better health, 76.9%, χ^2=4.658, p=0.031). Furthermore, those without post-secondary education were more likely to be in favour of Medicare coverage of chiropractic than those with post-secondary education (83.7% vs. 74.0%, χ^2=13.705, p=0.0002). In general, there was no regional difference between the proportion of people who agreed and disagreed with Medicare coverage for chiropractic. However, among those who had used chiropractic, no such marked socio-demographic differences were identified.

Visits to Osteopaths

Regarding Medicare coverage of osteopathy treatment, compared to the above three CAM therapies, a relatively lower proportion (56.7%) of survey participants considered it should be covered. Among users, the proportion was increased to 85.8%. Marked differences were found in participants' responses towards osteopathy treatment. Similar to covering chiropractic treatment, a higher proportion of positive suggestions came from those without private health insurance (74.7% compared to those with private health insurance, 64.6%, χ^2=10.42, p=0.001), and among those without post-secondary education (74.5%) than those with such education (65.1%, χ^2=8.884, p=0.003). When it came to the monetary aspect, it was not unexpected that the proportion (81.3%) of lower-income participants (<A$20,000) who were positive about Medicare coverage was much higher than those among the higher-income participants (A$20,000-A$40,000, 73.0%, and >A$40,000, 64.1%, χ^2=15.979, p=0.0003).

Similar to acupuncture, there is a significant regional difference of the proportions of people who considered Medicare should cover osteopathy. In general, South Australia and Western Australia residents were more reluctant to suggest that Medicare coverage should extend to osteopathy (57.3% and 61.4%, respectively, compared to 70.2% in New South Wales, 73.2% in Victoria and 72.2% in Queensland, χ^2=9.770, p=0.044). For cross-tabulation analysis among osteopathy users, the sample size is relatively small to draw a significant conclusion.

7.1.4.2 Private Health Insurance Coverage of CAM

Information on participants' private health insurance coverage (PHI) status, has been analysed earlier as one of the key demographic characteristics in making comparisons of a series of questions on the possible correlation of private health insurance and the utilisation on CAM. Subgroup analyses on private health insurance among users of 17 specific forms of CAM, as well as on those who had visited relevant CAM practitioners were presented in Table 4.5, Table 4.6, Table 4.10 and Table 4.11. In addition, participants' insurance claim history on CAM, as well as detailed opinions on private health insurance coverage of four regulated forms of CAM: acupuncture, Chinese herbal medicine, chiropractic and osteopathy are presented.

Overall, more than half (55.7%) of the survey respondents had private health insurance cover in the 12 months preceding the survey. A much smaller proportion (28.1% among all participants, or 50.4% among respondents with private health insurance cover) indicated that their health insurance provided rebates on their expenditure on CAM, and approximately one quarter (25.4%) of the participants did not remember or were not sure about CAM coverage. Among all participants, less than one in seven (13.9%, or 24.9% among participants with private health insurance cover) actually received some form of CAM rebate from their insurance companies in the preceding 12 months.

Among the 150 participants who had received health insurance CAM rebates, nearly half (49.5%) were for visits to chiropractors, one in three (35.2%) were for Western massage therapy. Visits to acupuncturists were the third (18.8%) most popular form of complementary therapies for which CAM users claimed a health insurance rebate, closely followed by claims for visits to naturopaths (12.2%) and osteopaths (11.2%). A number of CAM users had also

claimed for other forms of CAM or visits to CAM practitioners. These included Chinese herbal medicine (5 people), homeopathy (5), aromatherapy (5), Western herbal medicine (4), Chinese therapeutic massage (3), clinical nutrition (3), yoga (2), meditation (1) and energy healing (1). In addition, three persons had claimed for other forms of CAM, rather than the 17 investigated.

Among those who had received a CAM rebate, nearly one third (31.0%) had claimed for two or more forms of CAM in the preceding year. However, among those who had received at least one rebate from their private health funds, little variation between different demographic characteristics was found. An exception is those with post-secondary education, who were more likely to have claimed for CAM (30.9%) than those without post-secondary education (16.3%, χ^2=14.203, p=0.0002).

Consistent with the high frequencies of people receiving rebates for chiropractic and massage therapy, people having private health insurance were more likely to choose chiropractic treatment (19.0%) than those without (12.4%, χ^2=8.234, p=0.004), and were more likely to use massage therapy (32.5%) than those without (20.9%, χ^2=17.625, p<0.0001).

Participants' attitudes toward the possible influencing factors that may have attracted them to purchase insurance are important considerations for the health insurance industry. Participants were asked: "If a particular private health insurance company offered coverage of CAM for no or little additional cost, would that influence you to buy insurance from that company?" Among all participants, nearly half (45.0%) agreed that coverage of CAM would influence their decision on purchasing health insurance; a further 10.4% said it would probably influence their decision, whereas the remaining 44.5% would not consider this to be an influencing factor. When examining specific characteristics of all participants, it is clear that

the younger adults with post-secondary education, employed, with private health insurance and with a higher household income would be more likely to consider that this would influence their purchase of health insurance (Table 7.5). In addition, those identified as CAM users in the current study appeared to be more influenced than non-CAM users (Table 7.5).

Table 7.5 Will CAM coverage influence the purchase of private health insurance?

Characteristic	CAM coverage influence the purchase of insurance in the future		Statistical difference	
	Yes (%)	No (%)	Chi Square	p
Age (year)			35.708	<0.0001
18-34	60.2	39.8		
35-64	50.6	49.4		
65+	31.4	68.6		
Post-secondary education			14.783	0.0001
Yes	55.9	44.1		
No	43.4	56.6		
Employment			28.817	<0.0001
Employed	56.9	43.1		
Unemployed or not in labour force	39.2	60.8		
Private health insurance			20.681	<0.0001
Yes	56.8	43.2		
No	42.0	58.0		
Annual household income			12.279	0.002
<A$20,000	38.6	61.4		
A$20,000-A$40,000	55.2	44.8		
>A$40,000	54.2	45.8		
Current CAM user			84.016	<0.0001
Yes	60.2	29.8		
No	28.1	71.9		

Concerning insurance coverage on the four regulated forms of CAM in Australia (i.e. acupuncture, Chinese herbal medicine, chiropractic and osteopathy), all participants were asked: "Even if you have to pay a slightly higher premium, do you think visits to [name of one of the four CAM] should be covered by private health insurance, with no gap to pay?"

Acupuncture

A total of 70.5% of the participants considered visits to an acupuncturist should be covered by private health insurance even they had to pay a slightly higher premium; this figure includes 6.7% who advocated such coverage only if the acupuncturists were registered. However, nearly one in five (18.9%) participants believed it did not need to be covered by private health insurance. The proportion who agreed acupuncture should be covered by private health insurance increased to 81.7% among current acupuncture users, while the proportion (13.0%) who believed acupuncture should not be covered remained relatively high. Among all participants and among all acupuncture users, no marked difference was observed between different characteristics in responding to whether or not acupuncture should be covered by private health insurance.

Chinese Herbal Medicine (CHM)

Nearly two thirds (64.9%) of all participants considered visits to CHM practitioners should be covered by private health insurance, even they had to pay a slightly higher premium. This number included 4.1% who were in favour of such coverage only if the practitioners were registered. However, more than one quarter (25.6%) of participants believed CHM did not need to be covered by private health insurance. The proportion of participants who agreed that visits to CHM practitioners should be covered by private health insurance increased to 81.0%

among current CHM users, while the proportion (15.0%) who considered visits to CHM practitioners should not be covered was also relatively high.

Among all participants, a few marked differences were observed in the characteristics in responding to whether visits to CHM practitioners should be covered by private health insurance. Surprisingly, the proportion (75.9%) of participants without private health insurance who believed that visiting CHM practitioners should be covered was higher than the proportion among those currently having private health insurance (68.8%, χ^2=5.887, p=0.015). On the other hand, CHM users were more likely to suggest private health insurance coverage for CHM (84.3%) than non-CHM users (70.7%, χ^2=6.018, p=0.014).

Chiropractic

A high proportion (79.9%) of all participants considered visits to chiropractors should be covered by private health insurance, even they had to pay a slightly higher premium. However, the proportion of participants (14.1%) who believed chiropractic did not need to be covered was also relatively high. The proportion who agreed chiropractic should be covered increased to 90.4% among chiropractic users, whereas the proportion of people who believed chiropractic should not be covered decreased to 6.4%. Consistent with this, chiropractic users in the current study appeared to request chiropractic to be covered by private health insurance more than non-chiropractic users (93.4% vs. 83.4%, χ^2=10.987, p=0.001).

Specifically, the younger adults without post-secondary education and without private health insurance were more likely to agree that chiropractic should be covered by private health insurance (Table 7.6). When examining the attitude towards chiropractic coverage among chiropractic users only, these marked differences however, did not exist.

Table 7.6 Should visits to chiropractors be covered by private health insurance?

Characteristics	Should be covered by private health insurance?		Statistical difference	
	Yes (%)	No (%)	Chi Square	p
Age (year)			6.017	0.049
18-34	88.2	11.8		
35-64	84.9	15.1		
65+	79.9	20.1		
Post-secondary education			6.797	0.009
Yes	82.5	17.5		
No	88.4	11.6		
Private Health Insurance			6.085	0.014
Yes	82.9	17.1		
No	88.4	11.6		

Osteopathy

Nearly two thirds (65.7%) of all participants believed visits to osteopaths should be covered by private health insurance, even they had to pay a slightly higher premium; 17.0% believed it did not need to be covered. The proportion of participants who agreed osteopathy should be covered by private health insurance increased to 84.2% among current osteopathy users, while one in ten (9.3%) believed osteopathy should not be covered.

The percentage of those osteopathy users in the current study who considered that osteopathy be covered by private health insurance was greater than for non-osteopathy users (90.0% vs. 78.9%, χ^2=3.301, p=0.069, not statistically different). On the other hand, a higher proportion of participants without private health insurance (83.0%) considered that visits to osteopaths should be covered by private health insurance than those currently having private health insurance (77.2%, χ^2=4.568, p=0.033). Among all participants and among all osteopathy users, no additional marked difference was observed between different characteristics in responding to whether or not osteopathy should be covered by private health insurance.

7.1.5 Regulation and the Use of CAM

7.1.5.1 CAM Products and Government Regulation

Currently in Australia, the regulation of therapeutic products, including CAM products, is separated from CAM practitioner regulation (mandatory registration).

All survey participants were asked whether CAM products should be subjected to rigorous regulation, similar to the standards set for Western medicine. A total of 944 participants (unweighted figure) responded to this question, while 123 participants did not respond. Among all participants, nearly three quarters (73.6%) considered that CAM products should be regulated as rigorously as Western medicine products, whereas 15.3% did not consider this necessary. Of the 944 participants, a higher proportion of female adults (86.2%) than male participants (79.3%, χ^2=7.977, p=0.005) were in favour of such regulation. Age and other demographic factors seemed to have little influence on the proportion of those in favour of regulation of CAM products.

Among CAM users, a very similar proportion (74.0%) agreed that CAM products should be regulated in the same way as Western medicine products. A proportion of CAM users (16.6%) did not agree with this statement, which was slightly higher than the proportion of all participants (15.3%). The above noted gender differential between people who agreed and disagreed with the regulation statement remains significant among CAM users, although such variation is smaller (84.8% among female CAM users compared to 78.0% among male users, χ^2=5.189, p=0.023).

7.1.5.2 CAM Practitioner Registration

Acupuncturists

Participants were asked to respond to a question of relatively recent mandatory registration of two types of CAM practitioners: acupuncturists and Chinese herbal medicine practitioners in Victoria. These two types of practitioners are only subjected to government registration in Victoria, however, such registration will be implemented in the states of Western Australia and New South Wales in the near future. Public attitudes towards the implementation of registration in Victoria and the necessity for implementing it in all states and territories around Australia were sought from all participants.

Well over four fifths (86.0%) believed that the mandatory registration of acupuncturists in Victoria provided for greater public safety and confidence in acupuncture. When excluding those who did not respond to this question, the biggest disagreements were between female and male participants and between people with and without private health insurance. A higher proportion (95.8%) of female participants agreed with the public safeguards provided by government regulation than male participants (91.4%, χ^2=7.924, p=0.005), and people with private health insurance appear to be more likely to agree with government regulation (95.8%) than those without private health insurance (90.8%, χ^2=9.898, p=0.002).

When examining the responses of acupuncture users only, there is no gender difference, whereas there is a marked difference between people having and not having private health insurance. That is, all but one acupuncture user with private health insurance (98.6%) agreed with the safety viewpoint, while only 84.6% of acupuncture users without private health insurance agreed (χ^2=6.920, p=0.009).

Given the existence of regulation in Victoria, it is of particular interest to examine the possible regional difference in response to the question on acupuncture regulation provides public safety. However, for all participants, there is no marked difference among states; the proportion (93.8%) of Victoria participants who agreed with the statement ranges in the middle among all states (from 91.9% to 97.4%, χ^2=3.38, p=0.496). In addition, a similar trend is also observed among acupuncture users only.

Similar to the proportion of people who believe that mandatory registration of acupuncturists in Victoria would provide greater public safety, a high proportion (86.4%) of participants believed that all states and territories should require government regulation of acupuncturists. While there was less variance of gender difference, a statistically significant difference was observed between different age groups. A relatively higher proportion (95.3%) of middle-aged (35-64) participants agreed acupuncturists in all states and territories should be regulated than younger adults (18-34, 91.1%) and older adults (65+, 91.5%, χ^2=6.602, p=0.037). The age differential, however, did not exist among acupuncture users only.

The above noted difference between people with and without private health insurance towards the statement on public safety and confidence is also observed in the statement on the implications of government regulation on acupuncture in all states and territories. Among those participants with private health insurance, 95% responded positively, while only 90.6% of those without private health insurance (χ^2=9.134, p=0.003) responded positively. Among acupuncture users, the positive response was 98.6% among those with private health insurance but only 84.3% among those without private health insurance (χ^2=6.970, p=0.008).

Chinese Herbal Medicine Practitioners

The regulation of Chinese herbal medicine (CHM) practitioners in Australia is in the same situation as that relating to acupuncturists, that is, the registration of CHM practitioners is mandatory only in Victoria. In general, visits to acupuncturists are more common than visits to Chinese herbal medicine practitioners (Table 4.8). In an attempt to validate possible similarities and/or differences in attitudes towards the regulation of acupuncturists and CHM practitioners, all participants were also asked to respond to regulatory questions on CHM practitioners, similar to that regulatory question on acupuncturists, discussed above.

Similar to the findings on the regulation of acupuncturists, well over four fifths (82.7%) believed the mandatory registration of CHM practitioners in Victoria provided for greater public safety in CHM. When excluding those who did not respond to the regulatory question, the biggest variation in responses was between female and male participants and between people with different income ranges. A higher proportion (94.3%) of female participants agreed with the public safeguard on CHM than male participants (88.9%, χ^2=8.832, p=0.003), and those participants with middle-range household income (A$20,000-A$40,000) were also more likely to appreciate government regulation (96.0%) than those with an income of less than A$20,000 (88.5%) and those with an income higher than A$40,000 (91.9%, χ^2=6.395, p=0.041). When examining the responses of CHM users only, none of these differences was observed.

In terms of the possible regional difference in responding to current regulation on CHM practitioners in Victoria, both among all participants and among CHM users, there was no significant regional difference. However, surprisingly, the proportion (81.8%) of CHM users in New South Wales who believed that regulation of CHM practitioners would enhance public

safety was considerable lower than the proportions in other states (95.0% to 100.0%), although it is not statistically significant (χ^2=4.505, p=0.342).

With respect to the implementation of CHM regulation in all states and territories, a high proportion (85.0%) of participants believed all states/territories should require government regulation of CHM practitioners. However, both among all participants and among CHM users, there was no marked difference between different demographic information. Nevertheless, the proportions of CHM users in New South Wales and South Australia (77.7% and 85.4%, respectively) who considered all states/ territories should regulate CHM practitioners were considerable lower than the proportions in other states (94.5% to 100.0%), although it is not statistically significant (χ^2=5.584, p=0.232).

7.1.6 Lifetime Use of CAM

In addition to the 737 (weighted percentage 68.9%) participants who have been identified as CAM users in the current study, 42 (4.1%) used prayer (when considered as a form of CAM) and three (0.34%) used other forms of CAM only. Thus, when these are included, a higher proportion (73.4%) of CAM prevalence is estimated by the current survey.

The remaining 285 participants who did not use any form of CAM (this also excluded prayer and other forms of CAM) in the 12 months preceding the survey were asked about their lifetime use of CAM. Of these, a further 39.3% had used CAM at some time. Thus, among all participants in the current survey, 83.7% had used CAM products or had visited CAM practitioners at some time in their lives. On the other hand, among the lifetime-only CAM users (i.e. not a current CAM user, 110 in total), the demographic characteristics are similar to the above-noted characteristics among those CAM users (Table 7.7).

Table 7.7 Socio-demographic characteristics of lifetime-only CAM users

Characteristic	Lifetime CAM user		Statistical difference	
	Yes (%)	No (%)	Chi Square	p
Gender			10.644	0.001
Female	52.2	47.8		
Male	32.4	67.6		
Age (year)			15.041	0.001
18-34	43.4	56.6		
35-64	47.1	52.9		
65+	18.0	82.0		
Country of Birth			2.026	0.155
Australia	42.9	57.1		
Non-Australia	33.4	66.6		
State			9.864	0.043
New South Wales	41.8	58.2		
Victoria	34.2	65.8		
Queensland	43.7	56.3		
South Australia	21.0	79.0		
Western Australia	57.4	42.6		
Self-reported health status			7.536	0.006
Excellent/very good/good	43.0	57.0		
Fair/poor	18.6	81.4		
Post-secondary education			0.376	0.540
No	38.5	61.5		
Yes	42.1	57.9		
Employment			8.589	0.003
Employed	47.2	52.8		
Unemployed or not in labour force	29.2	70.8		
Private Health Insurance			0.852	0.356
Yes	42.8	57.2		
No	37.3	62.7		
Annual household income			4.965	0.084
<A$20,000	27.2	72.8		
A$20,000-A$40,000	43.6	56.4		
>A$40,000	45.8	54.2		

7.1.7 Future Use of CAM

Among all survey participants, over four fifths (81.0%) reported that they would consider using CAM for their health care in the future, while a relatively small proportion (11.2%) would not consider using it; the remaining 7.7% preferred not to respond to this question or were unsure about their future use of CAM. More specifically, of the 988 participants who made a definitive answer as to whether or not they would consider using CAM in the future, those who were female, younger adults, in a better health condition, employed and with higher income range were more likely to use CAM in the future (Table 7.8).

On the other hand, among CAM users, the vast majority (93.4%) indicated they would use CAM again, whereas 3.4% users would not consider using CAM in the future. Of these 25 CAM users who would not consider using CAM in the future, none, surprisingly, had previously experienced side-effects after using acupuncture, Chinese herbal medicine, chiropractic or osteopathy. Furthermore, the proportion of people who would consider using CAM in the future increased to 95.4% of those who had visited a CAM practitioner in the previous 12 months.

Table 7.8 Consideration for CAM use in the future

Characteristic	Consider using CAM in the future		Statistical difference	
	Yes (%)	No (%)	Chi Square	p
Gender			10.717	0.001
Female	91.3	8.9		
Male	84.3	15.7		
Age (year)			35.067	0.0001
18-34	94.1	5.9		
35-64	87.8	12.2		
65+	75.3	24.7		
Country of Birth			2.670	0.102
Australia	88.8	11.2		
Non-Australia	84.8	15.2		
State			8.062	0.089
New South Wales	88.3	11.7		
Victoria	89.6	10.4		
Queensland	89.8	10.2		
South Australia	78.2	21.8		
Western Australia	87.9	12.1		
Self-reported health status			18.924	0.0001
Excellent/very good/good	89.7	10.3		
Fair/poor	77.0	23.0		
Post-secondary education			3.183	0.074
No	85.6	14.4		
Yes	89.4	10.6		
Employment			19.666	0.0001
Employed	91.3	8.7		
Unemployed or not in labour force	81.6	18.4		
Private Health Insurance			2.794	0.095
Yes	89.3	10.7		
No	85.7	14.3		
Annual household income			14.317	0.001
<A$20,000	79.2	20.8		
A$20,000-A$40,000	91.4	8.6		
>A$40,000	90.0	10.0		

7.2 Discussion

7.2.1 Rationale for CAM Use

Apart from the characteristics discussed above relating to CAM use, there are factors that are often reported to be associated with a high prevalence of CAM, such as "perceived holistic approach of dealing with general health and diseases by CAM products and therapies", "perceived unmet health-care needs", "perceived higher risk of conventional medicine, or perceived lower risk of non-conventional medicine", and "belief in the efficacy of conventional medicine and/or the actual experience of the efficacy of the therapies".[46]

This survey asked all CAM users about their attitudes towards some common beliefs and attitudes to CAM use. However, in the survey, data on such beliefs and attitudes were not collected from those who were not CAM users. This consequently limits the extent to which the current survey can interpret the attitudes towards the use of CAM and conventional medicine. A comprehensive rationale for CAM use, in particular the rationale for not using CAM in Australia, remains unclear at this stage. Nevertheless, over half of CAM users believed Western medicine had a relatively high risk of adverse events, while less than a quarter of CAM users did not agree CAM is relatively safe. On the other hand, a relatively high proportion of CAM users (well over three quarters) agreed that CAM is a holistic or a natural approach to treatment.

When it comes to medical/health services, there is evidence of people using CAM because they have a poor perception of other health services.[206-208] A small proportion of the current study's participants also expressed this view. Nearly one in four CAM users in this survey believed that the service provided by their GPs was generally unsatisfactory. However, again,

whether such a viewpoint differed between CAM users and non-CAM users is unknown, as non-CAM users were not asked whether or not they were satisfied with medical services. The association between the attitudes towards, and experience of, Western medicine and their use of CAM is non-conclusive in the literature. Astin's US study found that negative attitudes towards, and experience of, conventional medicine were not predictive of CAM use.[46] In contrast, some earlier studies, based mainly on clinical patients, found a positive association towards CAM use.[209-212] Thus, in a recent study, it was suggested that although being "very satisfied" with overall care was significantly associated with much less CAM use, satisfaction with doctor-patient interaction was not associated with CAM use.[213]

There is ample evidence to suggest that those who are female and in a relatively higher social class are more likely to use CAM. This was also confirmed in the current survey. However, these characteristics of CAM users should not be confused with the rationale for CAM use. In addition, it would be more appropriate to describe attitudes and perceptions towards CAM use as factors that may relate to CAM use, rather than the "rationale" or "why" people use CAM.

Grzywacz *et al*. suggested that adults of different ages and races are using different forms of CAM to treat illnesses or prevent them. [153] The demographic characteristics related to CAM use, such as age range and income range, refer, in fact, to individuals' spending power (income), and the fact that the current middle-age adults were highly exposed to CAM during its rapid proliferation during the past two decades.[153] Thus, rather than concluding that a group of factors may have contributed to overall CAM use, there may have been numerous factors that could have contributed to different CAM modalities. CAM therapies aimed primarily at treatment, such as alternative-medicine systems (e.g. Chinese medicine), may be better explained by a health-behaviour model, guided by scientific evidence of efficacy and safety, and the health conditions of the users. Whereas, CAM therapies that are generally used

for the promotion of health (e.g. meditation and other mind-body therapies) may be better explained by a health-belief model, guided by a holistic approach and perceptions of use. [153]

As noted above, CAM utilisation studies are commonly conducted with cancer patients. Studies on rationale or on why patients choose CAM are also more commonly conducted with cancer patients. This has been emphasised in a recent published systematic review of 52 cancer studies.[214] The review revealed that such results are more promising in terms of clinical implications of CAM use. It found that frequently reported factors influencing CAM use were the belief that conventional medical treatment (e.g. chemotherapy) had harmful side-effects,[215] that CAM could control the side-effects believed to be caused by Western medicine[216-219] and that CAM was a non-toxic or less harmful therapy than Western medicine.[63,220-224] However, it is still important to note that the definition of overall CAM is still a major barrier to a generalisation of the above findings. Thus, perhaps the rationale for CAM use may be particularly important for health-care professionals in clinical practice, if such a model of the rationale for using CAM was established on the basis of a single cohort of clinical patients.

Finally, given the increasing emphasis on scientific evidence for both CAM and Western medicine, it is important to evaluate the resources where people receive information (particularly evidence of efficacy), and what types of resources or health interventions would influence the choices of CAM therapies. Ideally, these should be based on the use of CAM for specific health conditions, to better comprehend the complex trend of health-seeking behaviours.

7.2.2 Regression Analyses on CAM Use

Participants' characteristics of CAM use discussed above were based on statistical analyses at a bivariate level. Therefore, such findings have not been adjusted for potential confounders that may influence the associations of CAM with some particular characteristics. Such an approach is commonly used in the early stages of exploring the factors that may relate to CAM use, or as confirmatory analyses of previous findings, which is consistent with the objectives of the current survey. On the other hand, multivariate regression analyses were conducted to further confirm previous findings in Australia and overseas, and to discover the likelihood of individual factors that were related to CAM use among adult Australians.

In terms of demographic information, gender, age and educational background were found to be statistically associated with CAM use among current survey participants. In this respect, the odds ratio of females versus males using CAM was estimated as 1.6 in the current survey (the final predictive model, see Table 7.2), which is the same as the 2000 South Australian survey,[10] is very similar to an earlier 1993 South Australia study (odds ratio=1.7),[9] and is slightly higher than a 1999 Canadian study (odds ratio=1.3).[48]

The current survey also estimated that educational background is highly associated with CAM use. That is, those people with a post-secondary education are 1.9 times more likely to use CAM than those without a post-secondary education. This significant finding was also reported in the 2000 South Australia study, although the odds ratio was less significant.[10] It is of interest to note that in an in-depth US study on why patients use CAM, education also emerged as the only significant socio-demographic variable that will predict CAM use.[46]

In the current survey, age also emerged as another significant factor that predicts CAM use. While this was not reported in the 2000 South Australia study, [10] it had been previously estimated in a 1993 South Australia study[9] conducted by the same group of researchers. The estimated odds ratios were similar. The oldest age range (55+ in the South Australia study or 65+ in the current survey) appeared to have the smallest odds ratio (i.e. less likely to use CAM). Again, this was consistent with the 1999 Canadian study.[48]

The health behavioural model (HBM)[225]is one of the conventional models used to study health behaviour as a predictor of health care use. Thus, this may be particularly relevant in predicting the use of CAM services. Some researchers have taken this model into consideration.[226] It has been hypothesised and confirmed that individual believes the philosophic of CAM use related to holistic and natural characterises are more likely to use CAM.[46] In addition, individual with "perceived unmet health care needs" was also found to be 1.5 times more likely to be CAM users than those without such a perception. [48] Unfortunately, in the current study, data related to health behaviour was collected from CAM users only, and not from all surveyed participants. Therefore, it is not possible to include such data into a predictive model for this study. Nevertheless, other perceptions that are possibly associated with the use of CAM by adult Australians were collected, and emerged from the regression analysis. Notably, the view of health insurance coverage of CAM influences the decision to purchase of such insurance was frequently reported only among those CAM users.

Finally, although specific health conditions were not found significantly as predictor variables in the model of CAM use, back problems and trauma/injury were found to be significantly associated with those who had visited CAM practitioners over a 12-month period. The odds ratio (2.6) of people with back problems seeking CAM practitioners in the current survey was similar to a previous US study (2.3).[46]

7.2.3 Impact of Health Insurance on CAM Use

National Health Insurance

CAM has become a vast resource for health care internationally. The increasing popularity of CAM is also echoed by the increasing involvement of health insurance companies. In the US, based on a national survey,[227] Wolsko reported that full or partial coverage of CAM by health insurance providers is strongly associated with high-frequency use of CAM services. In the United Kingdom, there is a growing trend for the National Health Service to cover complementary medicine services.[228]

As CAM becomes widely available and acceptable in Australia, there is greater public interest in CAM being included under the cover provided by the national health insurance system (Medicare). For example, a study conducted over 10 years ago found that acupuncture services in Australia have risen steadily over the past two decades, and 15.1% of GPs in Australia have claimed Medicare rebates for acupuncture treatment.[167] Certainly, with the increasing evidence of a large proportion of GPs in Australia now practicing acupuncture and other CAM therapies,[95] the number of Medicare claims for acupuncture services performed by GPs is considerable. In 2002-2003, as estimated by the Australian Institute of Health and Welfare, the Australian Health Insurance Commission (HIC) provided A$13.5 million for 595,000 acupuncture Medicare procedures performed by medical practitioners.[147]

However, research on national health insurance and private health insurance and CAM use in Australia is extremely limited. Previous health surveys and surveys on CAM in Australia failed to investigate the possible correlation between insurance and CAM use, and did not explore the perceptions of, and attitudes towards, insurance and CAM use among Australians.

Thus, it is important to note from the current survey that approximately three quarters of participants who considered visits to practitioners of acupuncture and chiropractic should be covered by the Australian national health care; even though the surveyed participants were asked to take into account that there is limited money to fund Medicare for all Australians. Well over half of all participating adults considered Medicare should also cover visits to practitioners of Chinese herbal medicine and osteopathy, regardless of their status as current CAM users.

A recent endorsement from the Australian Government is promising for the future integration of CAM in the national health system. Thus, from 1 July 2005, new items on the Medicare Benefits Schedule (MBS) will make it easier for GPs to manage the health care of patients with chronic medical conditions, including patients needing multidisciplinary care. Eligible Australian patients are now allowed to receive up to five Medicare rebates from certain allied health practitioners, including chiropractors and osteopaths.[187]

As Pelletier and Astin pointed out, an increasing number of health providers, including hospitals, in the US are incorporating CAM to meet the high demand from consumers; however, the uncertainty about the profitability of CAM is a primary obstacle to such integration.[229] Thus, a representative national survey in Australia should be carried out to assess the true consumer demand of CAM coverage and reimbursement from Medicare. Optimistically, it will derive a set of commonly demanded CAM to be included in the Medicare system, which is rapidly growing in use and which is supported by growing rigorous scientific evidence.

Private Health Insurance

The "legitimisation" of a number of forms of CAM practice through statutory regulation in states or nationwide in Australia, for example, chiropractic, osteopathy, Chinese herbal medicine and acupuncture, and approval by the Therapeutic Goods Administration to market certain complementary medicines, raises considerations of relative access and equity for CAM and mainstream health care. As noted, in Australia, CAM treatments do not qualify for Medicare rebates, with the exception of limited referral services for chiropractic and osteopathic treatments, and acupuncture delivered by medical practitioners accepted by the Health Insurance Commission. Nevertheless, at present, some forms of CAM have attracted limited coverage from most major private health insurance funds in Australia.

In Australia, in March 2006, nearly half (43.1%) the Australian population were covered by private health insurance.[230] Most health insurance providers in Australia, including the Hospitals Contribution Fund of Australia (HCF), Newcastle Industrial Benefits (NIB) private health funds, Medibank Private Limited and the Medical Benefits Fund of Australia Limited (MBF) had benefit packages, which included rebates for some forms of CAM (generally chiropractic, remedial massage, osteopathy and acupuncture). However, detailed availability and public demand for private health insurance rebates for CAM in Australia is unknown.

In the current study, although over half (55.7%) of survey participants had private health insurance, less than one in seven (13.9%) had received a rebate from their insurance companies for CAM services in the previous 12 months. It appears that the cost of using CAM is mainly borne by individuals. With some 1.87 million Australians being recipients of the age pension (low household incomes),[149] the socio-economic implications of high levels of CAM use in the elderly needs to be considered.

The use of chiropractic remains one of the most substantial CAM services in Australia and overseas.[11,231] A considerably high prevalence of chiropractic has also been found in this study, and it was for the most popular forms of CAM, together with remedial massage and acupuncture, that CAM users had lodged health insurance claims. In particular, nearly half of those people who had received private health insurance rebates on CAM were for chiropractic services. This may be partially explained by the fact that, the practice of chiropractic in Australia, which has a history of over 100 years ago,[232] and which has been subjected to mandatory registration with regulatory bodies in all states and territories of Australia, is one of the earliest and most common forms of CAM services covered by private health insurance in Australia. Perhaps, it is not surprising that, in the US, a large telephone interview study revealed that virtually all the insurance providers in three states in the northeast of the US cover chiropractic services in some form, whereas only less than half of the insurance companies cover acupuncture or massage therapy.[233]

Perhaps one can also expect that people with private health insurance are more likely to choose chiropractic and remedial massage, as at least part of these services are currently covered by private health insurance in Australia. The present study has confirmed this supposition. Similarly, it is clear that a much higher proportion of people with private health insurance are likely to choose acupuncture services than those without such coverage. Given that the mandatory registration of acupuncture practitioners has been in place in Victoria, and is soon to be introduced in some other states in Australia, the association of private health insurance and acupuncture use also needs further investigation. Among all participants in this survey, nearly half agreed that insurance coverage of CAM would influence their decision on purchasing health insurance. It is of interest to note that a four-year retrospective data analysis on insurance claims suggested that people with chiropractic insurance coverage had lower annual health-care expenditure, compared to those without such coverage.[234]

Based on existing literature, there is strong evidence that many cancer patients will seek CAM therapies if insurance covers the cost.[235] More specifically, the use of naturopathy and acupuncture were more common, while the use of chiropractic was less common for cancer patients than people without cancer. [235] Detailed information on which forms of CAM have been claimed for which specific health conditions were not researched in this survey. Australian literature in this area has not been reported. Nevertheless, the majority of the current survey participants suggested private health insurance should cover the common forms of CAM, such as acupuncture and chiropractic. Thus, private health insurances in Australia cover certain common forms of CAM to a certain extent (approximately A$400-A$600 per year for a single person). However, it is not comprehensively understood whether consumers are fully utilising such coverage and what their attitudes towards the extent of the coverage are.

Finally, the consequences (particularly the economic aspects for the consumers and insurance companies) of including CAM in private health insurance policy have been poorly researched in Australia and overseas. This suggests the need for a representative national survey in the near future to meet the demands of rapidly growing CAM use and the potential requirements of insurance coverage in Australia.

7.2.4 Impact of Regulation on CAM Use

A regional Australian study in 2000 suggested that there has been a steady increase in the use of CAM by the South Australian population in the previous 10 years.[10] However, researchers also suggested a decline in the CAM market in 2004,[11] which could be attributed to consumer response to the adverse publicity generated by the TGA recalling Pan Pharmaceutical products from the market in 2003.[236] In contrast to this finding, the current survey found an increase in CAM use, when compared to these South Australia studies in 1993, 2000 and 2004.[9-11] However, the CAM classification used in these surveys was inconsistent, the targeted population were divergent (regional and national), and importantly, the current survey suggests the lowest CAM prevalence was, in fact, found in the state where the regional studies were conducted (South Australia). [9-11] Thus, whether the Pan Pharmaceutical product recall would have impacted on the popularity of CAM use in Australia is unclear. As a cross-sectional survey, the current survey is not able to confirm the trend of CAM use over time.

To strengthen the framework of CAM regulation in Australia in 2005 the Australian Government accepted most of the recommendations made by the Expert Committee on Complementary Medicines in the Australian Health System.[26] It is essential that a safety guide be established for the Australian general public to address continuing concerns of CAM use. Therefore, importantly, the Therapeutic Goods Administration has recently published a series of Australian regulatory guidelines for complementary medicines (ARGCM) to ensure that all therapeutic goods, including complementary medicines use and practice in Australia, are subject to rigorous standard.[237-241]

Whether such regulatory guidelines will contribute to the future increased use of CAM is unclear and will be hard to determine. As Weir suggest, there are many factors that may

contribute to the increasing use of CAM, including the higher cost of conventional medicine and the inability of science to provide a cure for all illnesses with a single form of medicine.[242] From a sociological perspective, Coulter and Willis also suggested that the "baby boomers" in Australia will age with a variety of chronic diseases, which are often considered to amenable to treatment by some forms of CAM.[243] The increasing availability of health insurance coverage for CAM will also increase the likelihood of people choosing a CAM service.[243]

Some three quarters of participants in the current survey considered CAM products should be regulated as rigorously as Western medicine. This figure includes those who did not identify themselves as CAM users. This, perhaps, further reflects a demand from the general public to have safer CAM products in Australia. In addition, this also echoes the findings of a recent South Australia survey that about half the survey participants assumed that a government agency tested CAM products. [11]

Currently, the practice of Chinese medicine in Australia, outside the jurisdiction of Victoria, is not subject to statutory registration. Nationwide, with the exception of chiropractic and osteopathy, there is no statutory registration requirement for other CAM professions. Over the past decades, some CAM professions in Australia have developed a self-regulatory system. Such regulatory mechanisms have been established in the absence of, or to complement legislation requiring mandatory registration, and rely on voluntary compliance by members of the relevant professions and industry organisations.[244] In Australia, the Australian Self-Medication Industry (ASMI) is the highest profile organisation representing industries involved in the manufacture and distribution of non-prescription consumer health-care products, such as over-the-counter medicines and complementary medicines.

In the interests of comprehending better the potential impact of the introduction of the statutory registration of Chinese medicine in a state of Australia (Victoria), this study specifically asked participants' about their perceptions toward this regulation. This study found that well over four fifths of survey participants considered that the statutory registration of Chinese medicine practitioners, including acupuncturists and Chinese herbal medicine practitioners, provided for greater public safety and confidence in these forms of CAM. Significantly, there were similar proportions of survey participants from other states and territories. Furthermore, when asked whether acupuncturists and Chinese herbal medicine practitioners should be subject to registration with government authorities in all states and territories of Australia, again, well over four fifths of all survey participants considered it necessary. Such a proportion was observed both among the Victorian participants and participants from any other states/territories. Thus, as Carlton and Bensoussan commented, the Victorian Chinese Medicine Registration Act provides a model for regulating those CAM professions where the practices are potentially intrusive and dangerous. [244]

A previous study in Melbourne in 2002 found a large proportion of survey participants would consult a Chinese medicine practitioner who was not registered, and only 20% considered that such a registration system would make them more confident about consulting Chinese medicine practitioners.[62] As noted above, a large proportion of participants from this survey considered that statutory registration of Chinese medicine professions was important. Thus, it appears that Chinese medicine has been valued in Victoria since its introduction. Unfortunately, whether people are still prepared to consult an unregistered Chinese medicine practitioner was not asked in current study.

7.2.5 Risks Associated with CAM Use

The risks associated with the use of CAM are growing concerns for consumers, health professionals and governments. There is a widespread and misguided belief amongst consumers of many types of CAM products that since they are derived from natural sources they must be safe. However, herbal therapies are frequently complex mixtures of potentially biologically active ingredients. Such remedies may have multiple actions and may carry a high risk of both direct adverse effects and of adverse effects arising from interactions between their constituents and concurrent conventional therapeutic agents. It is of particular importance to note that nearly half of a survey population in Australia wrongly believed that CAM had been independently tested by a government agency before being sold.[11] Surprisingly, those younger than 35 years old, who were better educated and had a relatively high income comprised a higher proportion of people who held this belief.[11]

Additional concerns relate to the quality/purity of CAM products, the training of CAM practitioners, and the possibility that patients may discontinue beneficial conventional treatments. These concerns are particularly relevant to the elderly and to victims of chronic illness, due to factors such as the high prevalence of chronic diseases of the elderly, greater use of conventional medication, and their likely greater susceptibility to adverse effects and to therapeutic interactions. These issues may be compounded by poor communication between patients, CAM practitioners and conventional health-care practitioners, and indeed, by a lack of understanding by patients and practitioners of the potential adverse effects of CAM use.

Adverse Events of CAM Use

The potential risks associated with the use of medicinal products are not completely avoidable. These apply to all forms of medicines and therapies, including both Western medicine and CAM. Adverse events may occur with the use of products that have problems of contamination, toxicity, lack of quality control and inappropriate labelling, [11] as well as problems related to the advice provided by health professionals (it could be negligence). In addition, reports on interactions between CAM and Western medicine are not unusual.[245-248]

It is important that consumers should be aware of the potential negative effects of all medicines or treatments they are taking. Current survey participants were asked about their experiences of encountering adverse events after using acupuncture, Chinese herbal medicine, chiropractic and osteopathy (only if such a participant used one of these four forms of CAM). As noted-above, four participants claimed they experienced adverse events after acupuncture treatment. However, when the definition of adverse event relating to acupuncture was specified according to standards developed in collaboration with the British Medical Acupuncture Society,[249] there was only one case which qualified as an adverse event (bruise).

An adverse event rate per 1,000 or per 10,000 practitioner consultations have been reported.[250-252] Survey participants in the current study provided an estimated incidence of 14 adverse events per 10,000 acupuncture consultations, which is much lower than the adverse event rate estimated by a prospective survey of 32,000 acupuncture consultations in the UK (i.e. an incidence of 684 per 10,000 consultations).[249] However, the current estimation was based on self-reported cases from those surveyed adults, whereas the UK study was based on reports from acupuncture practitioners over a 21-month period. The data are not directly comparable.

In the current survey, users of CHM, chiropractic and osteopathy also provided information on adverse events that may have been related to such CAM use. For the reasons mentioned in Chapters 6.1.1.9 and 6.1.3.4, the commonly estimated incidence rate per 1,000 consultations was not available for CHM and osteopathy. The current survey participants reported a relatively high incidence (2.96 per 1,000 consultations) of adverse events related to chiropractic treatment. Comparable data reported among Australian chiropractors were not identified at the time of writing this thesis. Nevertheless, it is important to point out that safety issues have attracted continuing safety concerns in previous studies in Australia. Thus, it has been commented that the practices of forms of CAM are not risk-free, and fatalities have occurred.[12,164,253] The incidence reported by Chinese medicine practitioners (including acupuncture and CHM) was estimated at 1.6 per 1,000 consultations.[164] Adverse events associated with herbal medicines, nutritional substances and homeopathic medicines was estimated at 2.3 per 1,000 consultations.[12]

In Australia, reports of suspected adverse reactions to drugs/medicines are sought from health professionals and are also received from consumers. Section 29A of the Therapeutic Goods Act 1989 requires sponsors of medicines registered or listed in Australia to report adverse reactions.[237] However, as stated in the report submitted by the Expert Committee on Complementary Medicines in the Health System to the Minister for Health and Ageing, Australian Commonwealth Government, "the current adverse reaction reporting system may be biased away from complementary medicines, because complementary medicines are usually self-prescribed and problems may not be reported, should they arise".[14] Recently, a special "1800" telephone number has been established within the Therapeutic Goods Administration to facilitate reporting of adverse reactions[26] in an effort to strengthen the collection of adverse event.[12]

Concurrent Use of CAM and Western Medicine

Some consumers are so committed to CAM products and therapies that they actively self-prescribe or self-administer CAM. In the current study a high proportion of participants used CAM and conventional medical services concurrently, and that many CAM users did not inform their medical doctors (and the medical doctors did not ask) about their use of CAM. Clearly, these findings are of concern, given the increasing reports of side-effects of CAM products[254] and other problems, such as contamination of CAM products.[255]

A Canadian study conducted over a decade ago found users of chiropractic tended to also be concurrent users of conventional health care.[256] However, most studies in the current literature failed to investigate the concurrent use of specific forms of CAM and Western medicine.[11,47,257-259] Perhaps, one of the biggest limitations of the current literature on the concurrent use of CAM and Western medicine is that it has failed to collect detailed information on which specific forms of CAM have been commonly used concurrently with Western medicine, and to what extent (e.g. used on the same day, for the whole duration of the illness, or only used intermittently). Addressing these limitations, in a recently published South Australia study,[11] CAM and Western medicine use on the same day was investigated, and the study found that about half of CAM users had concurrently used Western medicine. Due to the time and resource limitations, the current survey was not designed to collect such data.

It is worth noting that the pattern of concurrent use has been found to be related to some specific characteristics, such as gender and age.[260] In addition, some studies have also suggested that the greater the value the participants attached to spirituality, the greater the likelihood of users to use both treatments.[46,210,260] A national survey in the US further revealed

that adults who used both CAM and Western medicine appeared to value both, and were less concerned about their medical doctor's disapproval than about the their doctor's inability to understand or incorporate CAM therapy use within the context of their medical management.[259] Supporting this finding, a relative lower proportion of CAM users in the current survey was concerned that their medical doctors may not approve of their use of CAM.

The concurrent use of CAM and Western medicine among those over 65 years old is becoming a matter of concern, as the proportion of concurrent was about 80%, being the highest among all ages.[11] Similarly, in the current survey, a significantly higher proportion of participants aged 65 and above had concurrently used both CAM and Western medicine than those of younger ages. The rationale of users for such concurrent use certainly warrants investigation in further studies. The high prevalence of concurrent use also suggests the need to educate older people to understand better the potential risks of concurrent use, and increase the awareness of voluntary communication of such use between older people and the health professionals.

Communication between Consumers and Practitioners

The concurrent use of both CAM and Western medicine may increase risk, as the pharmacological action and therapeutic mechanism of most forms of CAM products and therapies are inadequately understood to allow health professionals to identify possible interactions. The use of CAM does not, in general, suggest dissatisfaction with conventional medicine.[259,261] Thus, more recently, researchers have addressed the communication gap between conventional and alternative medicine.[262-266] In an interest to keep patients, CAM practitioners and medical doctors informed, and to provide better guidance to patients regarding the safety and efficacy of the concurrent use of CAM and Western medicine, the disclosure of CAM use to health professionals seems to be a critical step in future integrative health-care. Thus, comprehensive information to advise patients to use CAM is particular welcome.[267]

The reported non-disclosure rates are significantly high. About half of the current survey participants had only sometimes, or never informed their medical doctors about their CAM use. A national US survey estimated that nearly two thirds (63%) of CAM users did not disclose at least one of their CAM therapies.[259] Furthermore, qualitative studies on clinical patients also discovered a high proportion of non-disclosure. For example, a study on women with breast cancer found that nearly half (46%) did non disclose their use of CAM,[266] while another study on cancer patients revealed 34% non-disclosure.[264] The lowest disclosure rate, in the literature, was 23% among older, rural women.[268]

Although, as noted above, a significantly high proportion of participants aged 65 and older concurrently used both CAM and Western medicine than those in the younger age groups, these older CAM users, in fact, had a significantly higher proportion of always informed their

medical doctors of their CAM use than younger CAM users. This may be partially explained by the increasing popularity of CAM which has occurred in the past two decades, and most forms of CAM are relatively new to older people. While they are sensitive to CAM treatment to improve their health conditions, older people may be more proactive in informing their GPs, to optimise their health-care outcomes.

In the current study, the main reasons for non-disclosure volunteered by survey participants were, "medical doctors did not need to know", and the "doctor did not ask". Similar findings were commonly reported,[269-271] and have also been summarised in a recent review.[98] However, such "don't know" or "don't ask" results are no longer acceptable in modern health care, and a proactive management system is needed to approach individualised personal health.[261]

It is of interest to examine the perspectives of conventional health professionals about the communication of CAM use with their patients. A study conducted in the state of Ohio, in the US, found that none of the physicians would terminate the physician-patient relationship if a patient used CAM, in addition to the prescribed conventional medicines.[263] This should not be unexpected, as the use of CAM by conventional medical doctors themselves was quite high,[265] and there are increasing debates about the benefits of conventional doctors proactively asking patients about their use of CAM.[261,267,272]

As a greater understanding develops about the question of the interaction of CAM with conventional medicines and the matter of full disclosure of such use, various ethical and legal issues are raised.[273,274] Even more contentious than ignoring patients' use of CAM, is the possibility that conventional medical doctors may be at risk of potential malpractice liability.[275] For example, as scientific evidence of CAM is increasingly acceptable to the

conventional medical system, there is a strong argument that medical doctors should advise patients about the CAM treatment options, in addition to other medical treatment options, to satisfy the duty of care of a medical doctor.[276] On the other hand, on the basis of existing US laws, "a physician referral to a CAM provider could be considered a "negligent" decision if it delays or eliminates the patient's opportunity to obtain necessary medical treatment".[277] However, the risk of litigation for medical doctors' failure to provide adequate information on CAM to patients is probably low at this stage.[278]

In Australia, according to the General Guidelines for Medical Practitioners on Providing Information to Patients, published by the National Health and Medical Research Council, a "medical doctor should encourage patients to reflect on opinions, ask more questions, and should be assist patients in seeking other medical opinion where this is requested".[279] Thus, in 2002, the Australian Medical Council posted a position statement (Section 4.4): "the medical practitioners should specifically ask patients about their use of complementary medicine and take account of this in their management of conditions. Medical practitioners should be sufficiently well informed about complementary medicine to be able to provide advice to patients when appropriate."[280]

In summary, the fact of concurrent use of CAM and Western medicine, and possibly other un-named forms of medicines or therapies, is no longer uncommon in today's health-care system. The trend of such use may increase over time. A better understanding of the benefits of complementary and alternative medicine, and the potential risks of using these medicines is critical to improve the communication of such use between patients and health professionals.

7.2.6 Lifetime Use and Future Use of CAM

In addition to investigating the prevalence of CAM use over a 12-month period, the current survey has also investigated the lifetime usage of CAM, that is, its use at least once at any time previously. Approximately five out of six adult Australians have used CAM at some time in the past. The prevalence is comparable to a previous regional study in New South Wales, where three-quarters of the adults reported on a lifetime use of CAM.[38] In addition, consistent with noted regional differences of CAM use found in the current survey, the prevalence of lifetime use only (precluding current users) varied among different states. For example, the prevalence of lifetime use only in South Australia was found to be significantly lower – about half the prevalence found in New South Wales, Queensland and Western Australia. However, there may be a recall bias for lifetime CAM prevalence, as participants may have used non-Western medicine years ago, and not able to recall the details.

Lifetime use of CAM is occasionally reported among CAM surveys. In general, a significantly higher prevalence of lifetime use was reported, compared to the prevalence over a 12-month period. This is evident in several frequently cited CAM surveys. For example, the prevalence rose from 42.1% for a 12-month period to 67.6% for a lifetime period in the 1997 US national survey.[281] The prevalence of lifetime use also increased from 50% to 73% in the 1997 Canadian national survey,[6] and from 28.3% to 46.6% in the UK survey.[5] Furthermore, the UK and Canadian studies also provided detailed information on the lifetime use of each of the individual forms of CAM. The lifetime use of these therapies was generally consistent with the popularity of use for each modality in a 12-month period.[5,6] Limited information of such lifetime CAM use is available in the Australian literature, and has not been investigated in the current survey.

It is apparent that the use of complementary medicine is more popular in Australia and in many Western countries than it was a decade ago. It is not hard to find reasons why this type of medicine is becoming more popular. The increasing scientific evidence of the efficacy and safety of certain CAM therapies, and perhaps the recognition of the cost-effectiveness of some specific forms of CAM would partially explain its popularity. Thus, for various reasons (not investigated in the current survey), a large proportion of the surveyed participants indicated that they would use CAM in the future, and a vast majority of the current users will use CAM again.

CHAPTER 8. GENERAL DISCUSSION, CONCLUSIONS AND POLICY IMPLICATIONS

8.1 Overview of the CAM Survey

The detailed outcomes of conducting the survey are presented in Chapter 4.1. In brief, a total of 1,067 interviews were conducted with a representative cohort of adult Australians. By employing a random-digit telephone dialling method to contact potential participants, and by applying a national quota to ensure representativeness, the study population can be regarded as representative of the national Australian adult population. In addition, the representativeness of the study population is further confirmed though a series of statistical analyses (see Chapter 4.1.3).

Using a predefined quality assurance protocol, the survey information was captured during interviews and recorded in a computer-assisted telephone interview system. Thus, missing data were minimised. The validity of the data was extended after scale reliability analyses were carried out for different sections of the instrument, which confirmed its internal consistency of items measured by the scale. Finally, after all data were collected, a data-weighting process was applied before generating the survey results and performing consequent analyses. Thus, all data were adjusted to represent the national population.

Although the current study was conducted with an appropriate sample size and a national representative population, it is also important to note the study limitations when interpreting the results, in particular those concerning state differences. These are discussed below.

8.2 Limitations of the CAM Survey

The response rate is always a major concern for survey researchers, and is dependent on what is considered to be a completed interview. The rate can vary significantly according to some experienced survey companies. The response rate of the current survey is lower than for some other population surveys of its kind and could be considered as a significant study shortcoming. It seems likely that the employment of national quotas for gender and age-range during the recruitment stage limited voluntary participation and impacted significantly on the final response rate. This is further evidenced by the fact that when a particular quota category was filled (at an advanced stage of the recruitment process), a large number of potential participants was rejected (see Figure 4.1).

The increasing use of telemarketing from call centres making it harder for non-commercial telephone health surveys, such as the present survey. In addition, the short period of survey may have influenced the response rate. Hence, the number of call-backs was limited, and there was not enough opportunity for optimising follow-ups. A large number of unresolved call-back numbers (76 appointments in total) would also have impacted on the final response rate. Finally, recognised government authorities administer most population health surveys, and people may have a greater tendency to participate in these. The low response rate may have introduced a non-response bias. If those refused to participate were less likely to use CAM or had negative attitudes towards CAM, this could result in a decrease of the current overall estimation of CAM prevalence.

The relatively small sample size in a number of states and territories (i.e. Australian Capital Territory, Northern Territory and Tasmania) may have limited the results that can be generated at a state level. With a larger sample size, additional information would have been

generated. The most important information would be the definitive differences on regional use of CAM, and on the use of each of the 17 forms of CAM. The current survey suggests marked regional differences among states. However, the sample size was too small to draw conclusions from Tasmania, Northern Territory and Australian Capital Territory. Similarly, some questions relating to specific CAM therapy (in particular, osteopathy) were administered to a relatively small group of users and restricted the reliability of the findings.

In terms of outcome measures, perhaps the biggest limitation was that data on the specific medical conditions treated by each form of CAM were not collected. Such specific questions on each of the 17 CAM therapies would have been time-consuming, and it was impossible to collect adequate relevant data in the relatively short interview time available. Information about the medical conditions for which CAM, as a whole, is being used is of general interest but more specific data about each individual form of CAM would have been of greater interest. On the other hand, data were collected on medical conditions that resulted participants visiting a GP. Analyses were then performed to examine the association between participants having such a medical condition and visiting a CAM practitioner or using CAM. In addition, data were also collected on which acupuncture, Chinese herbal medicine, chiropractic and osteopathy were used to treat specific medical conditions.

Due to the limitation on interview times, it was not possible to obtain detailed data on the perceived benefits and risks of using each of the 17 forms of CAM. This information should be particularly valuable for regulatory bodies and policy makers. Nevertheless, general opinions on the overall helpfulness of CAM and the actual benefits and risks after using the four regulated forms of CAM were collected.

Several common problems encountered in similar CAM studies remain unsolved. Previous researchers have commented on the fact that discrepancies in CAM classification have led to discrepancies in the data relating to CAM prevalence even within a specific country.[18] This creates great difficulties in interpreting survey results and comparing data from different studies.[282] There is no general agreement on what constitutes the totality of CAM therapy. In particular, the matter of precisely classifying different forms of vitamins and supplements as complementary medicine products or non-CAM products is critical and impacts on the overall prevalence significantly. The argument being that most studies found that the highest prevalence of a single form of CAM was generally in the use of vitamins and minerals. For example, the current study found 45.8% participants used multivitamins, and the majority (86.4%) of these users had not visited a CAM practitioner. If self-administered multivitamins are excluded, a lower overall CAM prevalence will certainly be estimated.

This situation becomes more complicated when considering the modality of multivitamins included in the definitions of CAM in previous studies. For example, people may purchase supplements over the counter on the recommendation of friends or relatives who had originally received prescriptions from their medical doctors or CAM practitioners. The indirect "prescription" is contradictive with the definition being used in the 1996 US CAM study –CAM was defined with the exclusion of vitamins prescribed by a medical doctor and daily vitamins.[3] Another US study employed an alternative definition of self-measurement of vitamins in terms of "overdose in excess of the Recommended Daily Allowance".[1] The issues about vitamins and supplements also presented dilemma for the current survey in regard to participants making a decision about what constitutes CAM and what doesn't. This implies that arriving at a precise and acceptable definition of each CAM modality requires further research.

There are substantial differences between countries and regions in the relative popularity of many therapies usually considered as CAM, presumably reflecting different social and health care contexts. A pilot study of the current study to determine the types of CAM used most commonly in Australia revealed the relatively high popularity of aromatherapy (subsequently confirmed by the main survey), which concurred with previous Australian regional surveys[9-11]. Surprisingly, aromatherapy was not included in the total CAM prevalence of relevant US national health surveys.[1,4]

Through this study, other issues that need to be addressed in future studies are identified. These problems and limitations are consistent with existing literature on population surveys[283] (e.g. the difficulty of accessing mobile phones). This may be justified, based on the fact that fixed telephones are used by over 97.5% of households in Australia.[284] In this respect, gaining access to mobile phone has only been incorporated into limited numbers of Australian population surveys. Another complexity is that the use of multi-phone lines within households. This is relevant, because more than one line in a household, will increase the chances of that household being selected.

It was determined that English would be used as the language for the interviews, therefore people from ethnic groups that do not speak English have not been included in this study. Fortunately, throughout the interviews very few people were excluded due to language barriers. To date, no study has been conducted in Australia to examine CAM use in the indigenous population. Future follow up studies should address the above matters, and possibly include participants from diverse social culture backgrounds.

8.3 General Conclusions

Prior to the conduct of the survey, three systematic reviews were completed to summarise the current overall utilisation of CAM, and the specific use of Chinese medicine in general populations around the world. CAM use in different regional and clinical populations in Australia has also been systematically evaluated. As noted above, the uncertainties of CAM definitions and classifications may affect estimates of the true prevalence of CAM. Nevertheless, there is evidence that the prevalence of most forms of CAM (e.g. herbal medicine and acupuncture) in many countries has increased steadily.

This study took an important step in initiating a national population-based survey in Australia to provide critical data on the current use of CAM in Australia. The findings indicate that the use of CAM in Australia is considerably higher than that extrapolated from previous regional studies. National expenditure on CAM appears to account for almost half the total expenditure on non-subsidised health-care products. Moreover, it was estimated that Australians made almost the same number of visits over a 12-month period to CAM practitioners as they did to conventional medical practitioners. This study again raises serious concerns about the concurrent use of Western and CAM therapies, and the lack of communication between patients and medical practitioners with regard to CAM use.

In addition to estimations of the utilisation of CAM from a national perspective, this study also explores possible regional differences, which shows that there were marked differences between states, for example, South Australia has lower overall prevalence of CAM use when compared with other states. In addition, the present survey also suggested that regional differences in the use of several specific forms of CAM were apparent. Thus, extrapolation of national CAM use based on regional studies should be undertaken with caution.

As Straus (2005) stated, understanding who uses CAM and why they do so informs the research goals, initiatives and collaborations of the NCCAM.[8] Thus, the current study provides a useful national resource base for further research, including intervention studies. The outcomes of this investigation will be relevant to a broad range of health-care professionals and researchers, therapeutic regulators, and educators in the areas of public health, health policy, general medicine, and complementary medicine. In all, in Australia, what was known previously in the field of this study and what this study adds can be summarised in the table below (Table 8.1).

Table 8.1 What was known previously and what this study adds

What was known previously on this topic
• There has been no previous national Australian study on the use of CAM. National estimates of CAM use have been extrapolated from a regional study in 2004. • There is evidence from studies in the US and the UK of increasing CAM use. Previous studies have highlighted major concerns about the concurrent use of CAM and conventional medical treatments.
What this study adds
• A reliable estimate of CAM use by the Australian population. • Evidence of marked regional differences in CAM use in Australia. • Evidence of significant regional differences in the use of specific forms of CAM • Expenditure on CAM products by Australians is estimated to account for almost half of their "out-of-pocket" expenditure on non-subsidised health-care products. • Comparison of national expenditure on CAM and conventional medical services. • Specific benefits and risks perceived by the users of common forms of CAM • Specific benefits and adverse events that users of common forms of CAM considered they have experienced. • The discussion of CAM use between CAM users and their medical doctors. • The extent, the demand for and consequences of health insurance cover for CAM. • Public attitudes towards statutory CAM product and practitioners regulation.

8.4 Policy Implications

The findings of the current study have a number of implications for ongoing health policy development. Firstly, given ongoing shortages in the medical workforce, particularly general medical practitioners, and the increasing public and private costs of medical services, the increasing popularity of certain CAM therapies may offer opportunities to reduce the burden of heath-care services. This could be done by identifying CAM modalities which, based on evidence of their safety and effectiveness, could effectively contribute to health service delivery, in concert with conventional health-care services. To achieve such outcomes would require understanding by practitioners of the relevant CAM and conventional therapies of how the two systems could be effectively harmonised to achieve agreed health-economic outcomes. Such "harmonisation" could probably best be achieved through the curricula of CAM and conventional health practitioner training programs, and would need to be updated and strengthened by ongoing professional educational programs. In some cases, specific forms of CAM might prove be more cost-effective, either alone or in combination with conventional therapies, than conventional treatments alone. However, little is known about the economic implications of CAM from a macro and/or a micro level. Cost-effectiveness studies on CAM should be part of a future research program.

Secondly, the increasing popularity of CAM therapies offers alternative avenues to patients who have not been effectively managed by conventional medicine. However, there is inadequate research that produces critical data concerning the quality, efficacy and safety of these CAM therapies. And critically, the current funding model of National Health and Medical Research Council does not provide a mechanism to support such research. In addition, there is no national policy that recognises the role of CAM in the health care system and as a result, these therapies were not managed in the same manner as western medicines

with respect to quality, safety and efficacy. Consequently, patients who use these therapies may be exposed to additional risks due to the inadequate information available. The contribution by consumers to these therapies is substantial, thus, it should be the government's role to ensure research in CAM therapies are supported to ensure public safety.

Thirdly, comprehensive knowledge of the forms of CAM that are most commonly used within the community, the purposes for which they are being used, and the demographics of the users are essential for effective health service planning. It is also important to understand how much consumers know about the efficacy and safety of the CAM products and therapies they choose to use, particularly in regard to the concurrent use of multiple therapies, irrespective of whether these are CAM or conventional. Based on this information, appropriate strategies can be developed to educate CAM users about the appropriate use of the therapies, their benefits and risks, and the importance of discussing the use of concurrent therapies with qualified practitioners.

Fourthly, quality of CAM practitioner training needs to incorporate sufficient Western medical knowledge and clinical assessment skills to ensure timely identification of risks and proper referral is made. In addition, practitioner training should also incorporate recent research findings. Furthermore, compulsory continuing professional education is needed to ensure that practitioners are providing the best possible care to their patients by applying new research results into practice and to ensure public safety.

Finally, the issue of health insurance coverage of CAM products and services requires further consideration. It is clear from the current study and a number of previous studies in Australia and overseas, that there is a high demand for insurance cover of CAM from users, both through the national health insurance system and private health insurance. Such demand is

likely to increase with increasing evidence of efficacy of certain forms of CAM and the introduction of regulation of both CAM products and services by governments. However, increasing access to insurance cover for CAM will certainly have major economic implications which will need to be fully considered in the context of overall public and private health expenditure.

8.5 Recommendations and Future Studies

In relation to further regulatory control of CAM therapies, products and practitioners, a large proportion of the participants in the current survey considered that regulation of CAM should be as rigorously as that for Western medicine and other conventional health services. Whilst several CAM therapies, are already subject to statutory regulation, in the interest of public safety and confidence in CAM, it is desirable that regulation be extended to other CAM modalities, particularly substance-based therapies such as naturopathy and types of herbal medicine in addition to Chinese herbal medicine.

Considerable efforts were to make the current study on CAM use by the Australian population as comprehensive as possible and to ensure that the validity of the data obtained. However, some issues related to CAM use could not be investigated in the current survey, such as the specific medical conditions for which each individual form of CAM was being used, and the outcomes of the treatments. To address the safety and efficacy concerns, these are perhaps the next aspects of CAM use that need to be investigated. In extending the study in this way it would be appropriate to give particular consideration to the use of specific CAM therapies for the treatment of chronic diseases, particularly in the elderly. It is often proposed that conventional medical treatments are not coping well with chronic illnesses and that forms of CAM for which treatment is based "holistic" principles may achieve better outcomes. At this time, rigorous evidence for this contention is lacking.

Prevalence of use data for most forms of CAM is patchy, even within specific countries and comparisons between surveys and between countries are difficult and often not meaningful. Future studies might focus on a group of common forms of CAM (e.g. the current 17 forms of

CAM investigated in the current study) in a particular region or country. Rather than exploring general demographic characteristics related to CAM use, such a study could focus on the factors that influence people's choice and use of CAM, such as, access to health insurance cover, regulatory controls, referrals from health professionals, and user's knowledge of evidence of efficacy, and safety.

Future Australian studies should also address the current lack of information about the use of CAM by population sub-groups, such as older people, children, adolescents, and the indigenous population. It would be important to establish an Australian national resource database to better comprehend matters surrounding CAM use, such as perceived and actual benefits and risks, as experienced by consumers. Ideally, these should be on an individual CAM modality basis, rather than overall CAM. From this aspect, consumer knowledge and beliefs of CAM is another area for further investigation.

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APPENDICES

Appendix A Brief explanations of the 17 forms of CAM that used in the survey

[Explain to survey participants by the interviewers, if asked]
Modified from the NCCAM and other sources.

1. **Acupuncture**
   A Chinese medical system, involves penetrating the skin with needles in acupuncture points

2. Chinese herbal medicine
   A Chinese medical system, using different types of herbs including plants, minerals and animal substances

3. **Chinese therapeutic massage**
   A Chinese medical system, based on Chinese medicine theory, it manipulates muscle and connective tissue to promote relaxation and well-being.

4. **Chinese medicine dietary therapy**
   A Chinese medical system, the idea is: "*food is also medicine*", practitioners will consider the food's colour, taste, texture and shape.

5. **Qigong *("Chee-Gong")*, martial art or Tai Chi *("Tai-Chee")***
   Qigong---Combines movement, meditation, and regulation of breathing to enhance the flow of qi–energy of a human body.
   Martial art---In Chinese, it means "Wu Shu *("Wu-Su")*"also known as "*Flighting system*". But it is different from body balance and body combat.
   Tai Chi---A traditional Chinese exercise, a series of movements normally done very slowly to move the body's qi.

6. **Western herbal medicine not including Chinese herbal medicine**
   Western herbalists use a mixture of herbs in their preparations eg. Garlic and St John's Wort, but generally do not use animal or mineral materials.

7. **Massage therapy not including Chinese therapeutic massage**
   A manipulate therapy, for the purpose of this study, it distinguishes to Chinese therapeutic massage. The common ones include Thai massage, Swedish massage and Japanese massage.

8. **Chiropractic ("*kie-roh-PRAC-tic*")**
   A manipulation therapy, it focuses on the relationship between body structure (primarily that of the spine) and function.

9. **Osteopathy ("*ahs-tee-oh-PATH*")**
   A full-body manipulation therapy, it believes that diseases arising in the musculoskeletal system.

10. **Homeopathy ("*home-ee-oh-PATH*")**
A medical system bases on the belief that "*like cures like*," or "*The Law of Similar*". A medicine is homeopathic only if it is taken based upon the similar nature of the medicine to the illness.

11. **Naturopathy ("*nay-chur-o-PATH*")**
A therapy by natural approaches using medicinal plants, nutrition, dietary supplements, lifestyle and exercise etc.

12. **Meditation**
A variety of techniques to enhance people's mind, such as stress relief, pain management etc.

13. **Aromatherapy**
Aromatherapy involves the use of essential oils, such as rose oil, peppermint oil, often apply through massage.

14. **Clinical nutrition eg. taking multivitamins or minerals**
Diseases and health that may benefit from dietary counselling and using multivitamins and minerals.

15. **Energy healing such as reiki ("*RAY-kee*") & Therapeutic Touch**
Reiki---is a Japanese word representing universal life energy.
Therapeutic Touch---A technique called "laying-on of hands", therapist passing their hands over the patient, healers can identify energy imbalances.

16. **Reflexology**
Foot therapy, believes foot is a corresponding part of the body.

17. **Yoga**
Mind body therapy, using different techniques, for example, coordination of breath and movement, and holding the postures.

Appendix B Survey questionnaire (sample)

Complementary Medicine Utilisation in Australia: A National Study (2005)

Section B: Use of and expenditure on complementary medicine

People use different types of complementary medicine for their health conditions or for improving general health. In order to obtain accurate information, I will need to read to you a list of types of complementary medicine.

QB1. In the last 12 months, have you used any one of the following types of complementary medicine? Please say "yes" or "no" when it is named, I may also ask you whether or not you have visited a practitioner and the number of visits in the last 12 months [*for that complementary medicine*]. Did you use:

Type of complementary medicine	Use in past 12 months		Visited practitioners in past 12 months		
	Yes	No	Yes	No	No. of visits
1. Acupuncture					
2. Chinese herbal medicine					
3. Chinese therapeutic massage					
4. Chinese medicine dietary therapy					
5. Qigong, martial art or Tai Chi					
6. Western herbal medicine not including Chinese herbal medicine					
7. Massage therapy not including Chinese therapeutic massage					
8. Chiropractic					
9. Osteopathy					
10. Homeopathy					
11. Naturopathy					
12. Meditation					
13. Aromatherapy					
14. Clinical nutrition eg. taking multivitamins or minerals					
15. Energy healing such as reiki and therapeutic touch					
16. Reflexology					
17. Yoga					
18. Prayer [Prevalence only]					
66. Other forms of CAM (Specify)					
[Name of other forms of CAM]:					

QB2. Consider the total amount you spent on complementary medicine products over the last 12 months, not including the cost of visiting practitioners, how much would you estimate this to be? [*Examples of complementary medicine products are herbs, multivitamins, homeopathic and naturopathic medicines etc.* ***Ignore*** *any rebates subsequently received, if there is any, and do* ***not*** *include the cost of visiting practitioners*]

1. Enter amount: A$:
2. Do not remember
99. Refuse to answer

Now, I would like to ask you about your expenditure on visits to complementary medicine practitioners.

QB3. Considering the total amount your complementary medicine practitioners charged you for consultation fees and treatments fees, how much was your personal out-of-pocket expenditure in the last 12 months? [***Do not*** *include the cost of complementary medicine products, either prescribed by practitioners, or self-prescribed.] [Confirm it is out-of-pocket expenditure, that is, after deducting rebates received from any sources such as insurance or employer.][If participant mentions the use of direct billing system from complementary medicine practitioners, tells participant that we are interested in their out-of-pocket expenditure only]*

1. Enter amount: A$:
2. Do not remember
99. Refuse to answer

QB4. Over the last 12 months, did you spend any additional money on things like courses, books, equipment or any other items related to complementary medicine? If yes, how much would you estimate this to be? [***Do not*** *include the cost answered in QB2 and QB3, that is, expenditure on complimentary medicine products and consultation fee*]

1. [Yes] Enter amount: A$:
2. [Yes] Do not remember
3. [No]
99. Refuse to answer

Appendix C Computer programming scripts for the interview (sample)

```
COMMENT:    COMPLEMENTARY MEDICINE UTILISATION IN AUSTRALIA
COMMENT:    MAY 2005    - WG2932    -    FINAL VERSION

COMMENT:    Screening section
comment    set for live project with sample and quotas
        set     intype='Live'
        set projname='wg2932'

COMMENT: SECTION B: USE OF AND EXPENDITURE ON COMPLEMENTARY
MEDICINE

PREBTXT display '@
  People use different types of complementary medicine for their health
@ conditions or for improving general health. In order to obtain accurate
@ information, I will need to read to you a list of types of complementary
@ medicine. My apologies for the long list but this is the only one in this
@ study.
@@ [If interviewee asks WHAT ARE SOME EXAMPLES OF COMPLEMENTARY
MEDICINE.
@       Answer: Examples include acupuncture, herbal medicine, chiropractic and so
@       on, but DO NOT include allied health such as physiotherapy, occupational
@       therapy, podiatry and speech pathology]
@@ [If interviewee asks WHAT ARE EXAMPLES OF A COMPLEMENTARY MEDICINE
PRODUCT.
@ Answer: Examples include herbs, multivitamins, homeopathic and naturopathic
@ medicines etc.]
@@ [If interviewee asks WHAT ARE EXAMPLES OF COMPLEMENTARY MEDICINE
PRACTITIONER
@ Answer: Examples include acupuncturist, Chinese medicine practitioner,
@ chiropractor, herbalist and Osteopath]@'
        pause

qb1list define [NAMES OF ALL FORMS OF CAM]

qb1alst define
   'CHINESE HERBAL MEDICINE'/
   'CHINESE THERAPEUTIC MASSAGE'/
   'WESTERN HERBAL MEDICINE NOT INCLUDING CHINESE HERBAL MEDICINE'/
   'MASSAGE THERAPY NOT INCLUDING CHINESE THERAPEUTIC MASSAGE'/
   'CHIROPRACTIC'/
   'OSTEOPATHY'/
   'HOMEOPATHY'/
   'NATUROPATHY'/
   'AROMATHERAPY'
```

```
qb1blst define
   'CHINESE MEDICINE DIETARY THERAPY'/
   'QIGONG, MARTIAL ART OR TAI CHI'/
   'MEDITATION'/
   'CLINICAL NUTRITION EG. TAKING MULTIVITAMINS OR MINERALS'/
   'ENERGY HEALING SUCH AS REIKI AND THERAPEUTIC TOUCH'/
   'REFLEXOLOGY'/
   'YOGA'/

COMMENT : questions for acupuncture only [Additional questions are required]
QB1AA     ask '@
QB1AB     ask '@
QB1AC     ask '@
QB1AD     ask '@

QB1TXT    display '@
QB1. In the last 12 months, have you used any one of the following types of
@ complementary medicine? Please say "yes" or "no" when it is named, I may
@ also ask you whether or not you have visited a practitioner and the number
@ of visits in the last 12 months for that complementary medicine.@'
        pause

        set user=0
        set major=0
        set minor=0
        set cmp=0

        unset qb1adum
        unset qb1bdum

QB1ADUM dummyask 'Major CAM used'
        resp mp qb1alst

QB1BDUM dummyask 'Minor CAM used'
        resp mp qb1blst

QB1TDUM dummyask 'All CAM used'
        resp mp qb1list

        for QB1L = qb1list ran

        set i=iteration

QB1  ask '@
QB1       Did you use ...
@@        '+QB1L+'?@'
        resp sp
        'Yes'/
        'No'
```

Appendix D Initial telephone contact (with plain language statement)

⇒ Good [morning/afternoon/evening], my name is [Researcher name] from [Survey research company name]. I am conducting a national study for RMIT University on complementary medicine use.

Your telephone number was randomly selected. I need to conduct the survey with a member of your household over the age of 18. If more than one person over 18, I would like to speak with the person over 18 whose birthday occurs next. Would that member of your household be available?

[NOT PREPARED TO PARTICIPATE: RECORD REFUSAL]

[THE NOMINATED HOUSEHOLD MEMBER IS NOT AVAILABLE

Would it be possible to arrange a time when I could speak with the person that you have identified?]

[IF THIS IS AGREED, ASK FOR THE FIRST NAME OF THE NOMINATED PERSON (IF NOT ALREADY KNOWN)

⇒Thank you, I will call at (time, day) to speak with (name).]

[IF THE PERSON NOMINATED IS AVAILABLE AND IS A DIFFERENT PERSON TO THE ONE WHO ANSWERED, REPEAT PARAGRAPH 1, ABOVE BEFORE PROCEEDING]

⇒ The information you provide will be treated in the strictest confidence and anonymously. No personal identifying information will be collected. You are free to withdraw at any time during the interview, in which case your responses will be deleted.

The study has been approved by the Human Research Ethics Committee of RMIT University. If, you have any questions about the study, please feel free to telephone the Research Team on 03-9925 7002 at RMIT University, or if have any complaints, you may contact the Ethics Committee on 03-9925 1745.

⇒ The interview will take about 15 minutes, are you prepared to participate in this survey now?

[NOT NOW

Could I call you at another time?] [ARRANGE APPOINTMENT]

[NO – REFUSE TO PARTICIPATE] ⇒[RECORD REFUSAL]
[YES – AGREE TO BE INTERVIEWED NOW
Thank you very much.] [START THE INTERVIEW]

Appendix E Plain language statement (print version)

A National Study on Complementary & Alternative Medicine Utilisation

You are being invited to participate in a research project called "Complementary and Alternative Medicine National Study". Thanks for your consideration in take part in this important study, which is a joint initiative of the Division of Chinese Medicine, RMIT University and School of Public Health, LaTrobe University.

1. The purpose of the study

This study is the first Australian nationwide study to investigate the use of complementary and alternative medicine (CAM). The purpose of this study is to obtain accurate information on the current prevalence, rationale and public expenditure on the use of various forms of CAM by the Australian population.

2. Study Investigators

The principal investigator is Mr. Lin Zhang, PhD candidate, RMIT University. The other members of the investigating team include Professor Charlie Xue, Head, Division of Chinese Medicine, RMIT University; Professor Vivian Lin, Head, School of Public Health, LaTrobe University; Professor David Story, Professor in Therapeutic Sciences, RMIT University; Prof. Marc Cohen, Professor in Complementary Medicine, RMIT and, Ms Anne-Louise Carlton, Senior Policy Analyst, Victorian Department of Human Services.

Wallis Consulting Group has been contracted to conduct the telephone interviews for the study, if you have any questions regarding the procedure of the interview, please contact them on 03-96211066.

3. Benefits of the study

The findings of this study are intended to provide reliable and comprehensive information on the prevalence, socio-economic implications and rationales for the use of CAM in Australia. It will also research attitudes to, and the influence of health insurance cover for CAM treatments. The outcomes are intended to provide reliable information of relevance to governments, health professional organisations, government, regulatory bodies and training institutions. This study will make a significant contribution to ensure the public confidence in the effective and safe health care choices of complementary medicine.

4. The selection of interview participants

Your telephone number was randomly selected along with other households across Australia by a computer system. As you requested additional information of the project and provided your contact details, we send this information sheet to you. No record of this information will be retained after sending you the requested information. Therefore your privacy will be preserved.

When the interviewer calls, you will be asked a few questions to select an individual within your household. Our target population is adult who is 18 years of age or older. People who have used CAM service and who have never used CAM service are both eligible to participate. When there is more than one eligible person in the household, the methodology used to select the participant will be the "next birthday" technique.

5. The procedure of the interview

We are using an interviewing system called computer assisted telephone interview (CATI), the information you provided to the interviewer will be entered into a computer database directly and anonymously. When a "call back" is requested, you will be asked to provide your first name in order to facilitate the re-contact. No record of this information will be retained after the purpose for which it was collected has been satisfied.

Immediately on completion of an interview, the data collected will be incorporated into the aggregate data file and the temporary file deleted to ensure anonymity. The telephone interview should take approximately 15 minutes to complete. In general, you just need to answer questions relevant to your experience and opinion of using CAM services. You are welcome to skip among questions, but we are very much appreciating if you can answer as many questions as possible.

6. Confidentiality

Your participation is completely voluntary, and you may withdraw from the study at any time during the interview. The information you provide to us will be treated in the strictest confidence and stored in a computer database anonymously. The only people who will have access to the information will be the research team of the study. No personal identifying information will be collected in this study. Publication and presentation of this study result will not identify you as a participant.

7. Ethical issues

This study has been reviewed and approved by the Human Research Ethics Committee of RMIT University. If you have any complaints about your participation in this study, you may contact directly to the Secretary, RMIT Human Research Ethics Committee, University Secretariat, RMIT, GPO Box 2476V, Melbourne, 3001 or by telephone on (03) 9925 1745.

8. Questions

The principal investigator, Mr Lin Zhang will be happy to answer any questions at any time, and he may be contacted in the School of Health Sciences, RMIT University on 03-99257002 or on Mobile 0412030771.

We appreciate your time to take part in this important national study. Thank you very much.

Appendix F Human ethics study approval form

2nd February 2005

Lin Zhang
Division of Chinese Medicine
School of Health Sciences
RMIT University
Bundoora Campus

Dear Lin,

FLSAPP 30 – 04 ZHANG Prevalence, expenditure and trends of complementary and alternative medicine usage in Australia: a national population-based study

Thank you for submitting your amended application for review.

I am pleased to inform you that the committee has approved your application for a period of **3 years** to **February 2008** and your research may now proceed.

The committee would like to remind you that annual reports are due during December for all research projects that have been approved by the Human Research Ethics Sub-Committee.

The necessary form can be found at:
http://www.rmit.edu.au/browse;ID=sp7y1u3kp66w;STATUS=A?QRY=ethics&STYPE=ENTIRE

Yours faithfully,

Diana Donohue,
Deputy Chair, Science, Engineering & Technology
Portfolio HREC Sub-committee Life Sciences

cc: Charlie Xue
Barbara Polus

Appendix G Additional statistical outputs

Appendix G1 Variables employed in the survey

Id	IDENTIFICATION
Phone	PHONE PREFIX
Pcode	POSTCODE
Region	STATE OR TERRITORY
f1	QF1 AGE
f2	QF2 GENDER
f3	QF3 HIGHEST LEVEL OF EDUCATION
f4	QF4 EMPLOYMENT STATUS
f5	QF5 ANNUAL HOUSEHOLD INCOME
f6	QF6 COUNTRY OF BIRTH
a1	A1 PERSONAL HEALTH RATING
a2	A2 CONSULTED A MEDICAL DOCTOR IN LAST 12 MONTHS
a3	A3 MEDICAL CONDITIONS VISITED MD FOR
a4	A4 NUMBER OF VISITS TO MD
B1@1	B1 USED ACUPUNCTURE
B1@2	B1 USED CHINESE HERBAL MEDICINE
B1@3	B1 USED CHINESE THERAPEUTIC MASSAGE
B1@4	B1 USED CHINESE MEDICINE DIETARY THERAPY
B1@5	B1 USED QIGONG, MARTIAL ART OR TAI CHI
B1@6	B1 USED WESTERN HERBAL MEDICINE NOT INCLUDING CHM
B1@7	B1 USED MASSAGE THERAPY NOT INCLUDING CTM
B1@8	B1 USED CHIROPRACTIC
B1@9	B1 USED OSTEOPATHY
B1@10	B1 USED HOMEOPATHY
B1@11	B1 USED NATUROPATHY
B1@12	B1 USED MEDITATION
B1@13	B1 USED AROMATHERAPY
B1@14	B1 USED CLINICAL NUTRITION
B1@15	B1 USED ENERGY HEALING
B1@16	B1 USED REFLEXOLOGY
B1@17	B1 USED YOGA
B1@18	B1 USED PRAYER
B1@x	B1 USED OTHER CAM
B1ba@1	B1AB VISITED PRACTITIONER FOR ACUPUNCTURE IN LAST 12 MONTHS
B1ab	B1AB ACUPUNCTURE PRACTITIONER IS A MEDICAL DOCTOR?
B1ac	B1AC TIMES VISITED A MD FOR ACUPUNCTURE TREATMENT
B1ad	B1AD TIMES VISITED NON-MD FOR ACUPUNCTURE TREATMENT
B1ba@2	B1BA VISITED A PRACTITIONER FOR CHINESE HERBAL MEDICINE
B1ba@3	B1BA VISITED A PRACTITIONER FOR CHINESE THERAPEUTIC MASSAGE
B1ba@4	B1BA VISITED A PRACTITIONER FOR CHINESE MEDICINE DIETARY THERAPY
B1ba@5	B1BA VISITED A PRACTITIONER FOR QIGONG, MARTIAL ART OR TAI CHI
B1ba@6	B1BA VISITED A PRACTITIONER FOR WESTERN HERBAL MEDICINE
B1ba@7	B1BA VISITED A PRACTITIONER FOR MASSAGE THERAPY
B1ba@8	B1BA VISITED A PRACTITIONER FOR CHIROPRACTIC
B1ba@9	B1BA VISITED A PRACTITIONER FOR OSTEOPATHY
B1ba@10	B1BA VISITED A PRACTITIONER FOR HOMEOPATHY
B1ba@11	B1BA VISITED A PRACTITIONER FOR NATUROPATHY
B1ba@12	B1BA VISITED A PRACTITIONER FOR MEDITATION
B1ba@13	B1BA VISITED A PRACTITIONER FOR AROMATHERAPY
B1ba@14	B1BA VISITED A PRACTITIONER FOR CLINICAL NUTRITION
B1ba@15	B1BA VISITED A PRACTITIONER FOR ENERGY HEALING
B1ba@16	B1BA VISITED A PRACTITIONER FOR REFLEXOLOGY
B1ba@17	B1BA VISITED A PRACTITIONER FOR YOGA
b1ba@18	B1BA VISITED A PRACTITIONER FOR PRAYER
b1bb@1	B1BB TIMES VISITED A PRACTITIONER FOR ACUPUNCTURE

b1bb@2	B1BB TIMES VISITED A PRACTITIONER FOR CHINESE HERBAL MEDICINE
b1bb@3	B1BB TIMES VISITED A PRACTITIONER FOR CHINESE THERAPEUTIC MASSAGE
b1bb@6	B1BB TIMES VISITED A PRACTITIONER FOR WESTERN HERBAL MEDICINE
b1bb@7	B1BB TIMES VISITED A PRACTITIONER FOR MASSAGE THERAPY
b1bb@8	B1BB TIMES VISITED A PRACTITIONER FOR CHIROPRACTIC
b1bb@9	B1BB TIMES VISITED A PRACTITIONER FOR OSTEOPATHY
b1bb@10	B1BB TIMES VISITED A PRACTITIONER FOR HOMEOPATHY
b1bb@11	B1BB TIMES VISITED A PRACTITIONER FOR NATUROPATHY
b1bb@13	B1BB TIMES VISITED A PRACTITIONER FOR AROMATHERAPY
b2	B2 AMOUNT SPENT ON CAM
b3	B3 AMOUNT SPENT ON CAM PRACTITIONERS
b4	B4 SPENT ON RELATED CAM YES/NO
b4x	B4 SPENT ON RELATED CAM
b5	QB5. EVER USED ANY FORM OF CAM
c1@1	Q1C WESTERN MEDICINE WOULD NOT IMPROVE YOUR MEDICAL CONDITIONS
c1@2	Q1C WM WOULD IMPROVE MEDICAL CONDITIONS BUT NOT CURE THEM
c1@3	Q1C WM HAS A RELATIVELY HIGHER RISK OF SIDE EFFECTS
c1@4	Q1C SERVICE PROVISION BY WMP IS GENERALLY UNSATISFACTORY
c1@5	Q1C COMPLEMENTARY MEDICINE IS RELATIVELY SAFE
c1@6	Q1C CAM PROVIDES A MORE HOLISTIC APPROACH TO HEALTH
c1@7	Q1C CAM IS A MORE NATURAL APPROACH TO TREATMENT
c2	QC2. USED CAM TOGETHER WITH WM
c3	QC3. TELL DOCTOR WHEN USE COMPLEMENTARY MEDICINE
@c41	QC4. REASONS TELL DOCTOR ABOUT CAM USAGE (1)
@c42	QC4. REASONS TELL DOCTOR ABOUT CAM USAGE (2)
@c43	QC4. REASONS TELL DOCTOR ABOUT CAM USAGE (3)
@c44	QC4. REASONS TELL DOCTOR ABOUT CAM USAGE (NONE)
@c51	QC5. REASON DO NOT TELL DOCTOR ABOUT CAM USAGE (1)
@c52	QC5. REASON DO NOT TELL DOCTOR ABOUT CAM USAGE (2)
@c53	QC5. REASON DO NOT TELL DOCTOR ABOUT CAM USAGE (3)
@c54	QC5. REASON DO NOT TELL DOCTOR ABOUT CAM USAGE (4)
@c55	QC5. REASON DO NOT TELL DOCTOR ABOUT CAM USAGE (5)
@c56	QC5. REASON DO NOT TELL DOCTOR ABOUT CAM USAGE (NONE)
c6	QC6. CONSIDER USING CAM IN THE FUTURE
c7	QC7. BELIEVE CAM SHOULD BE REGULATED AS RIGOROUSLY AS WM
d1	QD1 CURRENTLY HAVE PRIVATE HEALTH INSURANCE
d2	QD2. PRIVATE HEALTH INSURANCE COVER COST OF CAM
d3	QD3 OBTAINED A REBATE FOR CAM FROM PHI IN LAST 12 MONTHS
@d41	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (ACU)
@d42	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (CHM)
@d43	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (CTM)
@d44	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (CMDT)
@d45	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (QIGONG)
@d46	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (WHM)
@d47	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (MASSAGE)
@d48	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (CHIROPRACTIC)
@d49	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (OSTEOPATHY)
@d410	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (HOMEOPATHY)
@d411	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (NATUROPATHY)
@d412	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (MEDITATION)
@d413	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (AROMATHERAPY)
@d414	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (CLINICAL NUTRITION)
@d415	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (ENERGY HEALING)
@d416	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (REFLEXOLOGY)
@d417	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (YOGA)
@d418	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (PRAYER)
@d419	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (OTHER)
@d420	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (DON'T KNOW)
@d421	QD4 FORM OF CAM RECEIVED A REBATE FROM PHI (REFUSED ANSWER)
d5	QD5 COVERAGE OF CAM PRODUCTS INFLUENCE INSURANCE PURCHASE?

e1	E1 AMOUNT SPENT ON ITEMS RELATED TO ACUPUNCTURE
e2	QE2 REASONS USED ACUPUNCTURE TREATMENT
e3@1	QE3 CURE THE DISEASE/ SOLVE THE PROBLEM (BEFORE ACU)
e3@2	QE3 RELIEVE THE SYMPTOMS (BEFORE ACU)
e3@3	QE3 IMPROVE YOUR GENERAL HEALTH AND WELL-BEING (BEFORE ACU)
e4@1	QE4 CURE THE DISEASE/ SOLVE THE PROBLEM (AFTER ACU)
e4@2	QE4 RELIEVE THE SYMPTOMS (AFTER ACU)
e4@3	QE4 IMPROVE YOUR GENERAL HEALTH AND WELL-BEING (AFTER ACU)
e4x	QE4X DID THE ACUPUNCTURE HAVE NO EFFECT
e5	QE5 ENCOUNTERED ANY ADVERSE EFFECTS OR SIDE EFFECTS (ACU)
e6	QE6 HOW HELPFUL IN IMPROVING GENERAL HEALTH (ACU)
@e71	QE7 USED ACUPUNCTURE ON ADVICE FROM A MD?
@e72	QE7 USED ACUPUNCTURE ON ADVICE FROM A CAM PRACTITIONER?
@e73	QE7 USED ACUPUNCTURE ON ADVICE FROM FRIENDS/RELATIVES?
@e74	QE7 USED ACUPUNCTURE ON ADVICE FROM NEWS/TV/INTERNET
@e75	QE7 USED ACUPUNCTURE ON ADVICE FROM OTHER HEALTH PROFESSIONALS
@e76	QE7 USED ACUPUNCTURE WITHOUT ADVICE
@e77	QE7 USED ACUPUNCTURE ON ADVICE FROM (DON'T KNOW)
e8	QE8 CONSIDER USING ACUPUNCTURE IN THE FUTURE?
e9	QE9 REGULATION PROVIDES FOR GREATER PUBLIC SAFETY & CONFIDENCE (ACU)
e10	QE10 ALL STATES/TERRITORIES SHOULD REQUIRE GOVERNMENT REGULATION (ACU)
e11	QE11 MEDICARE SHOULD COVER TREATMENT PROVIDED BY ACUPUNCTURISTS
e12	QE12 VISITS TO ALL ACUPUNCTURISTS SHOULD BE COVERED BY PHI
e13	E13 AMOUNT SPENT ON CHINESE HERBS IN LAST 12 MONTHS
e14	E14 AMOUNT SPENT ON ITEMS FOR CHINESE HERBAL MEDICINE
e15	QE15 REASONS USED CHINESE HERBAL MEDICINE TREATMENT
e16@1	QE16 CURE THE DISEASE/ SOLVE THE PROBLEM (BEFORE CHM)
e16@2	QE16 RELIEVE THE SYMPTOMS (BEFORE CHM)
e16@3	QE16 IMPROVE YOUR GENERAL HEALTH AND WELL-BEING (BEFORE CHM)
e17@1	QE17 CURE THE DISEASE/ SOLVE THE PROBLEM (AFTER CHM)
e17@2	QE17 RELIEVE THE SYMPTOMS (AFTER CHM)
e17@3	QE17 IMPROVE YOUR GENERAL HEALTH AND WELL-BEING (AFTER CHM)
e17x	QE17X DID THE CHINESE HERBAL MEDICINE HAVE NO EFFECT
e18	QE18 ENCOUNTERED ANY ADVERSE EFFECTS OR SIDE EFFECTS (CHM)
e19	QE19 HOW HELPFUL IN IMPROVING GENERAL HEALTH (CHM)
@e201	QE20 USED CHM ON ADVICE FROM MD
@e202	QE20 USED CHM ON ADVICE FROM CAM PRACTITIONERS
@e203	QE20 USED CHM ON ADVICE FROM FRIENDS/RELATIVES
@e204	QE20 USED CHM ON ADVICE FROM NEWS/TV/INTERNET
@e205	QE20 USED CHM ON ADVICE FROM OTHER HEATH PROFESSIONALS
@e206	QE20 USED CHM WITHOUT ADVICE
@e207	QE20 USED CHM ON ADVICE FROM (DON'T KNOW)
e21	QE21 CONSIDER USING CHINESE HERBAL MEDICINE IN THE FUTURE
e22	QE22 REGULATION PROVIDES FOR GREATER PUBLIC SAFETY & CONFIDENCE (CHM)
e23	QE23 ALL STATES/TERRITORIES SHOULD REQUIRE GOVERNMENT REGULATION (CHM)
e24	QE24 MEDICARE SHOULD COVER TREATMENT PROVIDED BY CHM PRACTITIONERS
e25	QE25 VISITS TO CHM PRACTITIONERS SHOULD BE COVERED BY PHI
@e261	QE26 REASONS FOR VISITING CHIROPRACTOR (1)
@e262	QE26 REASONS FOR VISITING CHIROPRACTOR (2)
@e263	QE26 REASONS FOR VISITING CHIROPRACTOR (3)
@e264	QE26 REASONS FOR VISITING CHIROPRACTOR (4)
@e265	QE26 REASONS FOR VISITING CHIROPRACTOR (NONE OF ABOVE)
e27	E27 AMOUNT SPENT ON CHIROPRACTIC ITEMS IN LAST 12 MONTHS
e28	QE28 ENCOUNTERED ANY ADVERSE EFFECTS OR SIDE EFFECTS (CHIRO)
@e291	QE29 OUTCOME OF THE CHIROPRACTIC TREATMENT (1)
@e292	QE29 OUTCOME OF THE CHIROPRACTIC TREATMENT (2)
@e293	QE29 OUTCOME OF THE CHIROPRACTIC TREATMENT (3)
@e294	QE29 OUTCOME OF THE CHIROPRACTIC TREATMENT (4)
@e295	QE29 OUTCOME OF THE CHIROPRACTIC TREATMENT (NONE OF ABOVE)
e30	QE30 HOW HELPFUL IN IMPROVING GENERAL HEALTH (CHIRO)
@e311	QE31 USED CHIRO ON ADVICE FROM MD
@e312	QE31 USED CHIRO ON ADVICE FROM CAM PRACTITIONER

@e313	QE31 USED CHIRO ON ADVICE FROM FRIENDS/RELATIVES
@e314	QE31 USED CHIRO ON ADVICE FROM NEWS/TV/INTERNET
@e315	QE31 USED CHIRO ON ADVICE FROM OTHER HEATH PROFESSIONALS
@e316	QE31 USED CHIRO WITHOUT ADVICE
@e317	QE31 USED CHIRO ON ADVICE FROM (DON'T KNOW)
e32	QE32 CONSIDER USING CHIROPRACTOR IN THE FUTURE
e33	QE33 MEDICARE SHOULD COVER TREATMENT PROVIDED BY CHIROPRACTOR
e34	QE34 VISITS TO CHIROPRACTOR SHOULD BE COVERED BY PHI
e35	QE35 AGREE CHIROPRACTIC CARE IS A SAFE FORM OF TREATMENT
@e361	QE36 REASONS FOR USING OSTEOPATHY (1)
@e362	QE36 REASONS FOR USING OSTEOPATHY (2)
@e363	QE36 REASONS FOR USING OSTEOPATHY (3)
@e364	QE36 REASONS FOR USING OSTEOPATHY (4)
@e365	QE36 REASONS FOR USING OSTEOPATHY (NONE OF ABOVE)
e37	E37 AMOUNT SPENT ON ITEMS RELATED TO OSTEOPATHY
@e381	QE38 TYPE OF TREATMENT THE OSTEOPATH USED (1)
@e382	QE38 TYPE OF TREATMENT THE OSTEOPATH USED (2)
@e383	QE38 TYPE OF TREATMENT THE OSTEOPATH USED (3)
@e384	QE38 TYPE OF TREATMENT THE OSTEOPATH USED (4)
@e385	QE38 TYPE OF TREATMENT THE OSTEOPATH USED (5)
@e386	QE38 TYPE OF TREATMENT THE OSTEOPATH USED (NONE OF ABOVE)
@e391	QE39 OUTCOME OF THE OSTEOPATHY TREATMENT (1)
@e392	QE39 OUTCOME OF THE OSTEOPATHY TREATMENT (2)
@e393	QE39 OUTCOME OF THE OSTEOPATHY TREATMENT (3)
@e394	QE39 OUTCOME OF THE OSTEOPATHY TREATMENT (4)
@e395	QE39 OUTCOME OF THE OSTEOPATHY TREATMENT (NONE OF ABOVE)
e40	QE40 ENCOUNTERED ANY ADVERSE EFFECTS OR SIDE EFFECTS (OSTEO)
e41	QE41 HOW HELPFUL IN IMPROVING GENERAL HEALTH (OSTEO)
@e421	QE42 USED OSTEOPATH ON ADVICE FROM MD
@e422	QE42 USED OSTEOPATH ON ADVICE FROM CAM PRACTITIONERS
@e423	QE42 USED OSTEOPATH ON ADVICE FROM FRIENDS/RELATIVES
@e424	QE42 USED OSTEOPATH ON ADVICE FROM NEWS/TV/INTERNET
@e425	QE42 USED OSTEOPATH ON ADVICE FROM OTHER HEALTH PROFESSIONALS
@e426	QE42 USED OSTEOPATH WITHOUT ADVICE
@e427	QE42 USED OSTEOPATH ON ADVICE FROM (DON'T KNOW)
e43	QE43 CONSIDER USING OSTEOPATH IN THE FUTURE
e44	QE44 MEDICARE SHOULD COVER TREATMENT PROVIDED BY OSTEOPATH
e45	QE45 VISITS TO OSTEOPATH SHOULD BE COVERED BY PHI
QA3@0	A3 MEDICAL CONDITIONS VISITED MD FOR
QA3@1	A3 MEDICAL CONDITION (1) VISITED MD FOR
QA3@2	A3 MEDICAL CONDITION (2) VISITED MD FOR
QA3@3	A3 MEDICAL CONDITION (3) VISITED MD FOR
QA3@4	A3 MEDICAL CONDITION (4) VISITED MD FOR
QA3@5	A3 MEDICAL CONDITION (5) VISITED MD FOR
QE2X@0	QE2 REASONS USED ACUPUNCTURE TREATMENT
QE2X@1	QE2 REASON (1) USED ACUPUNCTURE TREATMENT
QE2X@2	QE2 REASON (2) USED ACUPUNCTURE TREATMENT
QE15X@0	QE15 REASONS USED CHINESE HERBAL MEDICINE TREATMENT
QE15X@1	QE15 REASON (1) USED CHINESE HERBAL MEDICINE TREATMENT
QE15X@2	QE15 REASON (2) USED CHINESE HERBAL MEDICINE TREATMENT
QE26X@0	QE26 SYMPTOMS FOR VISITING CHIROPRACTOR
QE26X@1	QE26 SYMPTOM (1) FOR VISITING CHIROPRACTOR
QE26X@2	QE26 SYMPTOM (2) FOR VISITING CHIROPRACTOR
QE26X@3	QE26 SYMPTOM (3) FOR VISITING CHIROPRACTOR
QE36X@0	QE36 SYMPTOMS FOR VISITING OSTEOPATH
QE36X@1	QE36 SYMPTOM (1) FOR VISITING OSTEOPATH
QE36X@2	QE36 SYMPTOM (2) FOR VISITING OSTEOPATH
QE36X@3	QE36 SYMPTOM (3) FOR VISITING OSTEOPATH
QE36X@4	QE36 SYMPTOM (4) FOR VISITING OSTEOPATH

Appendix G2 Frequency of visits to CAM practitioners (unadjusted data)

Acupuncture		CHM		CTM		WHM		WTM		Chiropractic		Osteopathy		Homeopathy		Naturopathy		Aromatherapy	
No. of visits	Frequency	No. of visits	Frequency	No. of visits	Frequency	No. of visits	Frequency	No. of visits	Frequency	No. of visits	Frequency	No. of visits	Frequency	No. of visits	Frequency	No. of visits	Frequency	No. of visits	Frequency
1	5	1	4	1	7	1	13	1	42	1	22	1	7	1	8	1	18	1	10
2	11	2	4	2	4	2	12	2	39	2	24	2	5	2	9	2	13	2	10
3	18	3	4	3	8	3	9	3	30	3	14	3	6	3	2	3	7	3	3
4	8	4	2	4	6	4	5	4	24	4	10	4	7	4	3	4	6	4	3
5	9	5	4	5	4	5	1	5	8	5	10	6	6	5	1	5	2	5	2
6	9	6	4	6	1	6	4	6	18	6	15	8	1	6	3	6	6	6	1
8	4	10	1	8	1	8	1	7	3	7	1	10	1	12	2	8	1	12	2
10	2	12	1	10	1	10	3	8	4	8	8	12	2	52	2	10	2	30	1
12	7	16	1	12	1	12	1	9	1	9	1	14	1	DK	1	12	5	300	1
16	1	20	1	24	1	20	1	10	8	10	9	15	1	Total	31	52	2	365	1
20	2	26	1	25	1	DK	2	12	19	11	1	20	1			DK	1	Total	34
26	1	Total	27	26	1	Total	52	14	1	12	25	24	1			Total	63		
30	1			Total	36			15	1	14	3	25	1						
32	1							19	1	15	6	Total	40						
45	1							20	4	20	1								
50	1							24	2	24	4								
112	1							30	2	26	1								
Total	82							35	1	35	1								
								40	1	40	1								
								50	2	50	1								
								52	1	60	1								
								55	1	120	1								
								DK	2	Total	160								
								Total	215										

DK: Don't know, CHM: Chinese herbal medicine, CTM: Chinese therapeutic massage, WHM: Western herbal medicine, WTM: Western therapeutic massage

Appendix G3 Statistics of frequency of CAM practitioner visits (adjusted data)

Statistics/CAM therapies		Acupuncture	CHM	CTM	WHM	WTM	Chiropractic	Osteopathy	Homeopathy	Naturopathy	Aromatherapy
N	Valid	80	24	34	48	213	155	37	30	62	31
	Missing/ outliers	0	0	0	2	2	0	0	1	1	2
Mean		8.75	5.98	5.43	3.75	6.29	8.44	5.69	6.65	5.32	3.98
Std. Error of Mean		1.82	1.27	1.14	0.53	0.60	1.00	0.97	2.44	1.21	1.12
Median		4.00	4.00	3.00	2.06	3.00	5.00	4.00	2.00	2.00	2.00
Mode		3.00	3.00	3.00	1.00	1.00	2.00	1.00	2.00	1.00	1.00
Std. Deviation		16.32	6.25	6.60	3.65	8.70	12.53	5.92	13.26	9.55	6.24
Variance		266.19	39.06	43.50	13.34	75.72	156.88	35.03	175.82	91.22	38.97
Skewness		5.05	2.12	2.53	2.41	3.48	5.75	1.97	3.22	4.28	3.69
Std. Error of Skewness		0.27	0.47	0.40	0.34	0.17	0.19	0.39	0.43	0.30	0.42
Kurtosis		29.08	4.43	5.56	7.46	14.26	44.62	3.62	9.51	19.25	14.18
Std. Error of Kurtosis		0.53	0.91	0.79	0.67	0.33	0.39	0.76	0.84	0.60	0.82
Minimum		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum		112.00	26.00	26.00	20.00	55.00	120.00	25.00	52.00	52.00	30.00
Sum		699.86	145.92	182.57	179.98	1337.59	1311.43	211.49	196.85	331.11	123.22
Percentiles	95	33.11	24.84	25.34	10.84	20.00	24.00	23.30	52.00	12.61	26.57

CHM: Chinese herbal medicine, CTM: Chinese therapeutic massage, WHM: Western herbal medicine, WTM: Western therapeutic massage

Appendix G4 Expenditure on CAM products (unadjusted data)

Dollar	Frequency	%	Valid (%)	Cumulative (%)
0	115	15.6	16.4	16.4
1	1	.1	.1	16.5
5	2	.3	.3	16.8
6	1	.1	.1	17.0
8	1	.1	.1	17.1
10	5	.7	.7	17.8
12	1	.1	.1	17.9
15	2	.3	.3	18.2
16	2	.3	.3	18.5
18	1	.1	.1	18.7
20	36	4.9	5.1	23.8
25	6	.8	.9	24.6
26	1	.1	.1	24.8
30	27	3.7	3.8	28.6
35	2	.3	.3	28.9
36	1	.1	.1	29.1
40	9	1.2	1.3	30.3
45	2	.3	.3	30.6
50	58	7.9	8.3	38.9
55	1	.1	.1	39.0
60	24	3.3	3.4	42.5
65	1	.1	.1	42.6
70	7	.9	1.0	43.6
75	3	.4	.4	44.0

Dollar	Frequency	%	Valid (%)	Cumulative (%)
80	13	1.8	1.9	45.9
90	2	.3	.3	46.2
99	1	.1	.1	46.3
100	75	10.2	10.7	57.0
110	2	.3	.3	57.3
120	5	.7	.7	58.0
130	1	.1	.1	58.1
134	1	.1	.1	58.3
140	2	.3	.3	58.5
150	31	4.2	4.4	63.0
160	1	.1	.1	63.1
170	1	.1	.1	63.2
180	1	.1	.1	63.4
200	79	10.7	11.3	74.6
230	1	.1	.1	74.8
240	2	.3	.3	75.1
250	14	1.9	2.0	77.1
275	1	.1	.1	77.2
300	30	4.1	4.3	81.5
350	8	1.1	1.1	82.6
360	3	.4	.4	83.0
400	15	2.0	2.1	85.2
450	5	.7	.7	85.9
480	1	.1	.1	86.0

Dollar	Frequency	%	Valid (%)	Cumulative (%)
500	31	4.2	4.4	90.5
600	10	1.4	1.4	91.9
650	1	.1	.1	92.0
700	2	.3	.3	92.3
750	3	.4	.4	92.7
800	3	.4	.4	93.2
850	1	.1	.1	93.3
1000	23	3.1	3.3	96.6
1040	1	.1	.1	96.7
1200	5	.7	.7	97.4
1400	1	.1	.1	97.6
1500	5	.7	.7	98.3
1950	1	.1	.1	98.4
2000	1	.1	.1	98.6
3000	3	.4	.4	99.0
3120	1	.1	.1	99.1
3500	1	.1	.1	99.3
4500	1	.1	.1	99.4
5000	2	.3	.3	99.7
6000	1	.1	.1	99.9
10000	1	.1	.1	100.0
Sub-total	702	95.3	100.0	
Don't Know	35	4.7		
Total	737	100.0		

Appendix G5 Expenditure on CAM practitioners (unadjusted data)

Dollar	Frequency	%	Valid (%)	Cumulative (%)
0	93	19.7	20.6	20.6
5	2	.4	.4	21.0
8	1	.2	.2	21.2
10	2	.4	.4	21.7
13	1	.2	.2	21.9
15	1	.2	.2	22.1
20	3	.6	.7	22.8
30	9	1.9	2.0	24.8
32	2	.4	.4	25.2
35	2	.4	.4	25.7
37	1	.2	.2	25.9
40	6	1.3	1.3	27.2
45	1	.2	.2	27.4
48	2	.4	.4	27.9
50	11	2.3	2.4	30.3
55	1	.2	.2	30.5
60	8	1.7	1.8	32.3
65	2	.4	.4	32.7
70	4	.8	.9	33.6
80	9	1.9	2.0	35.6
88	1	.2	.2	35.8
90	5	1.1	1.1	36.9
99	1	.2	.2	37.2
100	33	7.0	7.3	44.5
102	1	.2	.2	44.7
108	1	.2	.2	44.9
120	9	1.9	2.0	46.9

Dollar	Frequency	%	Valid (%)	Cumulative (%)
137	1	.2	.2	47.1
140	2	.4	.4	47.6
150	11	2.3	2.4	50.0
160	3	.6	.7	50.7
170	1	.2	.2	50.9
180	3	.6	.7	51.5
192	1	.2	.2	51.8
200	45	9.5	10.0	61.7
220	2	.4	.4	62.2
230	1	.2	.2	62.4
239	1	.2	.2	62.6
240	4	.8	.9	63.5
250	8	1.7	1.8	65.3
280	1	.2	.2	65.5
300	23	4.9	5.1	70.6
312	1	.2	.2	70.8
320	1	.2	.2	71.0
330	1	.2	.2	71.2
350	6	1.3	1.3	72.6
360	1	.2	.2	72.8
361	1	.2	.2	73.0
380	1	.2	.2	73.2
385	1	.2	.2	73.5
400	24	5.1	5.3	78.8
440	1	.2	.2	79.0
450	1	.2	.2	79.2
500	18	3.8	4.0	83.2

Dollar	Frequency	%	Valid (%)	Cumulative (%)
550	1	.2	.2	83.4
575	1	.2	.2	83.6
600	15	3.2	3.3	86.9
630	2	.4	.4	87.4
640	1	.2	.2	87.6
650	1	.2	.2	87.8
700	8	1.7	1.8	89.6
720	1	.2	.2	89.8
750	2	.4	.4	90.3
800	1	.2	.2	90.5
840	1	.2	.2	90.7
900	1	.2	.2	90.9
1000	19	4.0	4.2	95.1
1200	1	.2	.2	95.4
1205	1	.2	.2	95.6
1250	1	.2	.2	95.8
1300	1	.2	.2	96.0
1500	6	1.3	1.3	97.3
2000	8	1.7	1.8	99.1
3000	1	.2	.2	99.3
6500	1	.2	.2	99.6
7000	1	.2	.2	99.8
10000	1	.2	.2	100.0
Total	452	95.6	100.0	
Don't Know	21	4.4		
Total	473	100.0		

Appendix G6 Expenditure on CAM-related items (unadjusted data)

Dollar	Frequency	%	Valid (%)	Cumulative (%)
3	1	.6	.6	.6
7	1	.6	.6	1.1
10	2	1.1	1.1	2.3
12	1	.6	.6	2.9
15	1	.6	.6	3.4
20	9	5.0	5.1	8.6
25	3	1.7	1.7	10.3
30	12	6.7	6.9	17.1
35	2	1.1	1.1	18.3
40	5	2.8	2.9	21.1
45	2	1.1	1.1	22.3
50	17	9.5	9.7	32.0
60	5	2.8	2.9	34.9
70	2	1.1	1.1	36.0
75	3	1.7	1.7	37.7
80	4	2.2	2.3	40.0
90	1	.6	.6	40.6
100	22	12.3	12.6	53.1
110	1	.6	.6	53.7
120	4	2.2	2.3	56.0
140	2	1.1	1.1	57.1
150	6	3.4	3.4	60.6
160	1	.6	.6	61.1
170	2	1.1	1.1	62.3

Dollar	Frequency	%	Valid (%)	Cumulative (%)
176	1	.6	.6	62.9
180	2	1.1	1.1	64.0
190	1	.6	.6	64.6
195	1	.6	.6	65.1
200	21	11.7	12.0	77.1
240	1	.6	.6	77.7
250	2	1.1	1.1	78.9
300	6	3.4	3.4	82.3
400	6	3.4	3.4	85.7
500	4	2.2	2.3	88.0
600	4	2.2	2.3	90.3
650	1	.6	.6	90.9
800	2	1.1	1.1	92.0
1000	5	2.8	2.9	94.9
1500	3	1.7	1.7	96.6
1800	1	.6	.6	97.1
2000	1	.6	.6	97.7
3000	2	1.1	1.1	98.9
5000	1	.6	.6	99.4
6000	1	.6	.6	100.0
Total	175	97.8	100.0	
Don't Know	4	2.2		
Total	179	100.0		

Appendix G7 Statistics of expenditure on CAM (unadjusted data)

B2 AMOUNT SPENT ON CAM

N	Valid	702
	Missing	35
Mean		260.54
Std. Error of Mean		24.322
Median		100.00
Mode		0
Std. Deviation		644.430
Variance		415290.2
Skewness		8.305
Std. Error of Skewness		.092
Kurtosis		95.470
Std. Error of Kurtosis		.184
Range		10000
Minimum		0
Maximum		10000
Sum		182902

B3 AMOUNT SPENT ON CAM PRACTITIONER

N	Valid	452
	Missing	21
Mean		341.63
Std. Error of Mean		35.020
Median		155.00
Mode		0
Std. Deviation		744.529
Variance		554322.9
Skewness		8.082
Std. Error of Skewness		.115
Kurtosis		86.456
Std. Error of Kurtosis		.229
Range		10000
Minimum		0
Maximum		10000
Sum		154416

B4 AMOUNT SPENT ON RELATED CAM

N	Valid	175
	Missing	4
Mean		311.07
Std. Error of Mean		53.939
Median		100.00
Mode		100
Std. Deviation		713.540
Variance		509139.7
Skewness		5.434
Std. Error of Skewness		.184
Kurtosis		34.953
Std. Error of Kurtosis		.365
Range		5997
Minimum		3
Maximum		6000
Sum		54438

Appendix G8 Statistics of expenditure on CAM (adjusted data)

B2 AMOUNT SPENT ON CAM

N	Valid	665
	Missing	34
Mean		182.30
Std. Error of Mean		9.253
Median		100.00
Mode		0
Std. Deviation		238.672
Variance		56964.515
Skewness		2.290
Std. Error of Skewness		.095
Kurtosis		5.641
Std. Error of Kurtosis		.189
Range		1400
Minimum		0
Maximum		1400
Sum		121298
Percentiles	95	700.00

B3 AMOUNT SPENT ON CAM PRACTITIONER

N	Valid	427
	Missing	19
Mean		263.64
Std. Error of Mean		15.389
Median		150.58
Mode		0
Std. Deviation		317.813
Variance		101004.956
Skewness		2.000
Std. Error of Skewness		.118
Kurtosis		4.643
Std. Error of Kurtosis		.236
Range		2000
Minimum		0
Maximum		2000
Sum		112445
Percentiles	95	1000.00

B4 AMOUNT SPENT ON RELATED CAM

N	Valid	168
	Missing	4
Mean		212.33
Std. Error of Mean		23.601
Median		100.00
Mode		100
Std. Deviation		305.879
Variance		93562.038
Skewness		3.222
Std. Error of Skewness		.187
Kurtosis		12.034
Std. Error of Kurtosis		.373
Range		1988
Minimum		12
Maximum		2000
Sum		35665
Percentiles	95	1000.00

Appendix G9 Individual expenses on four forms of CAM (unadjusted data)

Acupuncture		CHM (actual herbs)		CHM related items		Chiropractic		Osteopathy	
Dollar ($)	Frequency	Dollar ($)	Frequency	Dollar ($)	Frequency	Dollar ($)	Frequency	Dollar ($)	Frequency
1	1	1	3	2	1	50	2	20	3
20	1	10	4	15	1	55	1	50	3
25	1	12	1	20	1	100	7	100	1
50	2	15	2	25	1	120	1	200	1
60	1	30	3	30	1	150	1	700	1
70	1	40	1	50	6	200	3	2000	1
85	1	50	9	60	1	240	1	Total	10
100	1	60	7	100	4	300	2		
150	1	70	1	150	1	500	1		
200	1	80	1	180	1	800	1		
220	1	90	1	250	1	1000	3		
300	2	100	16	400	1	Total	23		
800	1	150	4	500	1				
1000	1	160	1	1000	1				
6000	1	200	6	6000	1				
Total	17	240	1	10000	1				
		300	2	Total	24				
		500	3						
		1000	4						
		1040	1						
		4500	1						
		10000	1						
		Total	73						

CHM: Chinese herbal medicine

Appendix G10 Statistics of expenses on four forms of CAM (adjusted data)

Statistics		Acupuncture	CHM (actual herbs)	CHM (related items)	Chiropractic	Osteopathy
N	Valid	16	68	23	24	9
	Outliers	1	2	2	0	0
Mean		203.4229	167.56	145.97	298.65	429.57
Std. Error of Mean		70.17481	30.151	43.233	64.154	242.280
Median		88.13868	100.00	60.00	200.00	50.00
Mode		50	100	50	100	20
Std. Deviation		281.7954	248.832	208.984	311.020	722.760
Variance		79408.65	61917.351	43674.132	96733.714	522381.856
Skewness		2.266923	2.690	3.076	1.611	1.999
Std. Error of Skewness		0.56242	.291	.478	.477	.720
Kurtosis		4.676604	6.594	11.000	1.321	3.331
Std. Error of Kurtosis		1.08719	.574	.928	.926	1.407
Range		999	1039	998	950	1980
Minimum		1	1	2	50	20
Maximum		1000	1040	1000	1000	2000
Sum		3280.237	11412	3411	7019	3823
Percentile	95	1000.0	1000.00	869.63	1000.00	2000.00

CHM: Chinese herbal medicine

Appendix G11 Inter-correlations of CAM use and potential predictor variables

(blocks one, two and three)

Kendall's Tau_b		Use CAM	1	2	3	4	5	6	7	8	9	10	11	12	13
Use CAM	Correlation Coefficient	1.000													
	Sig. (2-tailed)	.													
	N	1067													
1. Gender	Correlation Coefficient	-.115(**)	1.000												
	Sig. (2-tailed)	.000	.												
	N	1067	1067												
2. Age	Correlation Coefficient	-.104(**)	-.038	1.000											
	Sig. (2-tailed)	.000	.191	.											
	N	1064	1064	1064											
3. Region	Correlation Coefficient	-.036	-.050	-.002	1.000										
	Sig. (2-tailed)	.214	.081	.950	.										
	N	1006	1006	1003	1006										
4. Post-secondary education	Correlation Coefficient	.123(**)	.097(**)	-.098(**)	-.093(**)	1.000									
	Sig. (2-tailed)	.000	.002	.001	.001	.									
	N	1067	1067	1064	1006	1067									
5. Employment	Correlation Coefficient	.074(*)	.170(**)	-.268(**)	.004	.205(**)	1.000								
	Sig. (2-tailed)	.016	.000	.000	.902	.000	.								
	N	1067	1067	1064	1006	1067	1067								
6. Income	Correlation Coefficient	.098(**)	.113(**)	-.203(**)	-.012	.277(**)	.470(**)	1.000							
	Sig. (2-tailed)	.002	.000	.000	.694	.000	.000	.							
	N	925	925	924	873	925	925	925							
7. Country of birth	Correlation Coefficient	.044	-.097(**)	-.044	-.002	-.109(**)	-.023	-.034	1.000						
	Sig. (2-tailed)	.148	.002	.131	.940	.000	.455	.277	.						
	N	1060	1060	1057	1000	1060	1060	922	1060						
8. Personal health rating	Correlation Coefficient	.021	.004	.148(**)	-.003	-.138(**)	-.170(**)	-.229(**)	.019	1.000					
	Sig. (2-tailed)	.489	.906	.000	.917	.000	.000	.000	.536	.					
	N	1066	1066	1063	1005	1066	1066	924	1059	1066					
9. Consulted GP in past 12 months	Correlation Coefficient	.111(**)	-.134(**)	.172(**)	.022	-.001	-.093(**)	-.069(*)	.058	.153(**)	1.000				
	Sig. (2-tailed)	.000	.000	.000	.450	.972	.002	.028	.060	.000	.				
	N	1067	1067	1064	1006	1067	1067	925	1060	1066	1067				
10. Consulted GP 4 times or more in past 12 months	Correlation Coefficient	.080(**)	-.130(**)	.195(**)	.022	-.116(**)	-.224(**)	-.192(**)	.002	.328(**)	.394(**)	1.000			
	Sig. (2-tailed)	.010	.000	.000	.449	.000	.000	.000	.946	.000	.000	.			
	N	1056	1056	1053	995	1056	1056	917	1049	1055	1056	1056			
11. Covered by private health insurance	Correlation Coefficient	.096(**)	-.039	.085(**)	.054	.185(**)	.147(**)	.300(**)	.061(*)	-.119(**)	.106(**)	-.021	1.000		
	Sig. (2-tailed)	.002	.208	.004	.058	.000	.000	.000	.048	.000	.001	.500	.		
	N	1061	1061	1058	1000	1061	1061	922	1055	1060	1061	1050	1061		
12. Coverage of CAM influences insurance purchase	Correlation Coefficient	.274(**)	-.046	-.164(**)	.013	.118(**)	.135(**)	.089(**)	-.001	-.031	.028	-.075(*)	.171(**)	1.000	
	Sig. (2-tailed)	.000	.156	.000	.680	.000	.000	.007	.985	.338	.394	.021	.000	.	
	N	954	954	952	899	954	954	835	948	953	954	946	951	954	
13. CAM should be regulated as rigorously as Western medicine	Correlation Coefficient	-.020	-.089(**)	.039	.055	-.057	-.013	-.037	.067(*)	.026	.044	.044	.028	-.034	1.000
	Sig. (2-tailed)	.535	.006	.208	.071	.077	.689	.268	.041	.419	.178	.176	.392	.321	.
	N	944	944	941	895	944	944	834	939	943	944	937	940	852	944

** Correlation is significant at the 0.01 level (2-tailed).* Correlation is significant at the 0.05 level (2-tailed).

Appendix G11 Inter-correlations of CAM use and potential predictor variables (continued, block four)

Kendall's Tau_b		Use CAM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Use CAM	Correlation Coefficient	1.000																		
	Sig. (2-tailed)	.																		
	N	1067																		
1. Health check-up	Correlation Coefficient	-.024	1.000																	
	Sig. (2-tailed)	.440	.																	
	N	1067	1067																	
2. Cold/flu/fever	Correlation Coefficient	.016	-	1.000																
	Sig. (2-tailed)	.597	.001	.																
	N	1067	1067	1067																
3. High blood pressure	Correlation Coefficient	.022	-.045	-.069(*)	1.000															
	Sig. (2-tailed)	.464	.138	.025	.															
	N	1067	1067	1067	1067															
4. Trauma/injury	Correlation Coefficient	.067(*)	-	-.060(*)	-.006	1.000														
	Sig. (2-tailed)	.030	.007	.049	.835	.														
	N	1067	1067	1067	1067	1067														
5. Arthritis	Correlation Coefficient	-.008	-	-.068(*)	.092(**)	-.050	1.000													
	Sig. (2-tailed)	.801	.003	.028	.003	.103	.													
	N	1067	1067	1067	1067	1067	1067													
6. Heart problems	Correlation Coefficient	-.021	-.050	-.048	.030	-.048	.147(**)	1.000												
	Sig. (2-tailed)	.494	.104	.119	.322	.120	.000	.												
	N	1067	1067	1067	1067	1067	1067	1067												
7. Gastrointestinal	Correlation Coefficient	.052	-.017	-.061(*)	.000	-.023	.009	.013	1.000											
	Sig. (2-tailed)	.090	.586	.046	.996	.462	.769	.669	.											
	N	1067	1067	1067	1067	1067	1067	1067	1067											
8. Diabetes	Correlation Coefficient	-.053	-.044	-.062(*)	.147(**)	-.046	.057	.063(*)	.043	1.000										
	Sig. (2-tailed)	.081	.148	.043	.000	.134	.063	.039	.156	.										
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067										
9. Skin problems	Correlation Coefficient	.011	-.030	-.037	-.011	-.041	-.010	-.036	-.004	-.034	1.000									
	Sig. (2-tailed)	.728	.328	.228	.729	.177	.737	.245	.892	.263	.									
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067									
10. Asthma	Correlation Coefficient	-.009	-.040	.005	-.050	-.015	-.008	.024	-.033	-.003	.037	1.000								
	Sig. (2-tailed)	.773	.194	.875	.105	.633	.789	.436	.286	.924	.232	.								
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067								
11. Depression	Correlation Coefficient	.040	-.054	.024	.034	-.040	.048	.024	-.002	.027	.003	-.029	1.000							
	Sig. (2-tailed)	.189	.077	.425	.260	.191	.120	.436	.946	.373	.913	.345	.							
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067							
12. Back problems	Correlation Coefficient	.049	-.052	-.053	.015	.038	-.035	-.004	-.001	-.033	.004	.076(*)	.006	1.000						
	Sig. (2-tailed)	.106	.088	.083	.616	.212	.247	.891	.973	.288	.886	.013	.834	.						
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067						
13. Pregnancy	Correlation Coefficient	.051	-.069(*)	.002	-.041	-.003	-.030	-.029	-.027	-.028	-.025	-.024	.017	-.024	1.000					
	Sig. (2-tailed)	.096	.024	.957	.176	.920	.326	.349	.374	.368	.416	.431	.585	.439	.					
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067					
14. Cancer	Correlation Coefficient	.040	-.071(*)	.000	-.018	-.005	.002	.072(*)	-.028	-.028	-.026	-.025	.015	-.024	-.021	1.000				
	Sig. (2-tailed)	.191	.021	.988	.558	.881	.956	.018	.363	.356	.405	.420	.619	.428	.502	.				
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067				
15. Gynaecologic	Correlation Coefficient	.026	-.071(*)	-.023	-.042	-.034	.002	-.029	-.028	-.028	.013	-.025	.015	-.024	-.021	.025	1.000			
	Sig. (2-tailed)	.401	.021	.447	.166	.265	.956	.338	.363	.356	.668	.420	.619	.428	.502	.408	.			
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067			
16. Other pains	Correlation Coefficient	.033	-.032	-.044	-.015	-.033	-.029	-.028	.048	.010	-.024	.018	-.024	.062(*)	-.020	-.020	-.020	1.000		
	Sig. (2-tailed)	.286	.291	.151	.630	.288	.338	.361	.117	.746	.428	.550	.443	.043	.523	.513	.513	.		
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067		
17. High cholesterol	Correlation Coefficient	-.018	-.021	-.039	.107(**)	-.029	.012	.015	-.024	.099(**)	-.022	.026	.026	-.021	-.017	-.018	-.018	.040	1.000	
	Sig. (2-tailed)	.567	.492	.200	.000	.343	.701	.632	.439	.001	.479	.402	.402	.501	.568	.559	.559	.194	.	
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	
18. Lung problems	Correlation Coefficient	.063(*)	-.038	-.010	-.035	.008	-.025	-.024	-.023	-.023	.026	.076(*)	-.020	.029	-.017	-.017	-.017	.101(**)	-.015	1.000
	Sig. (2-tailed)	.041	.214	.734	.254	.804	.408	.430	.454	.448	.402	.013	.507	.344	.581	.572	.572	.001	.630	.
	N	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067	1067

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Appendix G12 Statistics of a regression model on CAM use

(based on unweighted data)

Case Processing Summary

Unweighted Cases(a)		N	Percent
Selected Cases	Included in Analysis	819	76.8
	Missing Cases	248	23.2
	Total	1067	100.0
Unselected Cases		0	.0
Total		1067	100.0

a If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
No	0
Yes	1

Categorical Variables Codings

		Frequency	Parameter coding (1)	Parameter coding (2)
6. Income	Less than $20,000	148	.000	.000
	$20,000-$40,000	171	1.000	.000
	Over $40,000	500	.000	1.000
2. Age	18 - 34 years	249	.000	.000
	35 - 64 years	451	1.000	.000
	65 years+	119	.000	1.000

Block 0: Beginning Block

Iteration History (a,b,c)

Iteration		-2 Log likelihood	Coefficients: Constant
Step 0	1	1006.467	.784
	2	1006.125	.828
	3	1006.125	.828

a Constant is included in the model.
b Initial -2 Log Likelihood: 1006.125
c Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Classification Table (a,b)

Observed			Predicted: Use CAM No	Predicted: Use CAM Yes	Percentage Correct
Step 0	Use CAM	No	0	249	.0
		Yes	0	570	100.0
	Overall Percentage				69.6

a Constant is included in the model. b The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.828	.076	118.862	1	.000	2.289

Block 1: Method = Forward Stepwise (Wald)

Iteration History (a,b,c,d)

Iteration		-2 Log likelihood	Coefficients				
			Constant	Postsecondary	Gender	Age(1)	Age(2)
Step 1	1	986.932	.454	.585			
	2	985.843	.462	.686			
	3	985.842	.462	.689			
	4	985.842	.462	.689			
Step 2	1	972.382	.190	.609	.497		
	2	970.442	.151	.728	.605		
	3	970.439	.149	.733	.610		
	4	970.439	.149	.733	.610		
Step 3	1	966.398	.411	.569	.510	-.241	-.492
	2	963.989	.432	.685	.627	-.315	-.600
	3	963.983	.434	.691	.634	-.320	-.607
	4	963.983	.434	.691	.634	-.320	-.607

a Method: Forward Stepwise (Wald); b Constant is included in the model.
c Initial -2 Log Likelihood: 1006.125; d Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	20.282	1	.000
	Block	20.282	1	.000
	Model	20.282	1	.000
Step 2	Step	15.403	1	.000
	Block	35.686	2	.000
	Model	35.686	2	.000
Step 3	Step	6.456	2	.040
	Block	42.142	4	.000
	Model	42.142	4	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	985.842(a)	.024	.035
2	970.439(a)	.043	.060
3	963.983(a)	.050	.071

a Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	0	.
2	1.384	2	.501
3	2.897	6	.822

Contingency Table for Hosmer and Lemeshow Test

		Use CAM = No		Use CAM = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	138	138.000	219	219.000	357
	2	111	111.000	351	351.000	462
Step 2	1	74	77.749	94	90.251	168
	2	64	60.251	125	128.749	189
	3	74	70.251	166	169.749	240
	4	37	40.749	185	181.251	222
Step 3	1	56	58.127	63	60.873	119
	2	33	35.124	57	54.876	90
	3	42	41.960	85	85.040	127
	4	49	43.272	91	96.728	140
	5	32	30.122	89	90.878	121
	6	8	6.724	20	21.276	28
	7	18	22.060	97	92.940	115
	8	11	11.611	68	67.389	79

Classification Table (a)

Observed			Predicted		
			Use CAM		Percentage Correct
			No	Yes	
Step 1	Use CAM	No	0	249	.0
		Yes	0	570	100.0
	Overall Percentage				69.6
Step 2	Use CAM	No	0	249	.0
		Yes	0	570	100.0
	Overall Percentage				69.6
Step 3	Use CAM	No	16	233	6.4
		Yes	12	558	97.9
	Overall Percentage				70.1

a: The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 1(a)	Postsecondary	.689	.154	20.081	1	.000	1.993	1.474	2.694
	Constant	.462	.109	18.055	1	.000	1.587		
Step 2(b)	Gender	.610	.157	15.129	1	.000	1.841	1.354	2.504
	Postsecondary	.733	.156	22.072	1	.000	2.082	1.533	2.826
	Constant	.149	.135	1.227	1	.268	1.161		
Step 3(c)	Gender	.634	.158	16.062	1	.000	1.885	1.382	2.570
	Age			6.392	2	.041			
	Age(1)	-.320	.183	3.074	1	.080	.726	.507	1.039
	Age(2)	-.607	.247	6.047	1	.014	.545	.336	.884
	Postsecondary	.691	.158	19.228	1	.000	1.995	1.465	2.717
	Constant	.434	.188	5.329	1	.021	1.543		

a Variable(s) entered on step 1: Postsecondary. b Variable(s) entered on step 2: Gender. c Variable(s) entered on step 3: Age.

Block 2: Method = Forward Stepwise (Wald)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	11.686	1	.001
	Block	11.686	1	.001
	Model	53.828	5	.000
Step 2	Step	4.085	1	.043
	Block	15.771	2	.000
	Model	57.912	6	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	952.297(a)	.064	.090
2	948.212(a)	.068	.097

a Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5.582	8	.694
2	7.380	8	.496

Contingency Table for Hosmer and Lemeshow Test

		Use CAM = No		Use CAM = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	40	41.660	37	35.340	77
	2	33	35.177	48	45.823	81
	3	32	29.311	41	43.689	73
	4	27	26.288	51	51.712	78
	5	29	27.993	63	64.007	92
	6	33	33.658	89	88.342	122
	7	25	18.830	57	63.170	82
	8	6	9.628	42	38.372	48
	9	16	18.296	86	83.704	102
	10	8	8.159	56	55.841	64
Step 2	1	40	41.798	37	35.202	77
	2	41	39.094	46	47.906	87
	3	26	26.926	45	44.074	71
	4	28	25.543	45	47.457	73
	5	15	17.063	39	36.937	54
	6	23	25.044	61	58.956	84
	7	34	25.093	66	74.907	100
	8	12	14.668	55	52.332	67
	9	12	15.873	67	63.127	79
	10	18	17.898	109	109.102	127

Classification Table (a)

Observed			Predicted		
			Use CAM		Percentage Correct
			No	Yes	
Step 1	Use CAM	No	31	218	12.4
		Yes	24	546	95.8
	Overall Percentage				70.5
Step 2	Use CAM	No	24	225	9.6
		Yes	15	555	97.4
	Overall Percentage				70.7

a: The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 1(a)	Gender	.541	.161	11.221	1	.001	1.717	1.252	2.357
	Age			9.560	2	.008			
	Age(1)	-.403	.187	4.657	1	.031	.668	.464	.964
	Age(2)	-.764	.253	9.108	1	.003	.466	.283	.765
	Postsecondary	.694	.159	19.067	1	.000	2.001	1.466	2.732
	ConsultedGPinpast12months	.676	.196	11.876	1	.001	1.966	1.338	2.887
	Constant	.013	.224	.003	1	.953	1.013		
Step 2(b)	Gender	.517	.162	10.180	1	.001	1.678	1.221	2.305
	Age			10.998	2	.004			
	Age(1)	-.418	.187	4.997	1	.025	.658	.456	.950
	Age(2)	-.838	.257	10.616	1	.001	.433	.261	.716
	Postsecondary	.722	.160	20.338	1	.000	2.058	1.504	2.816
	ConsultedGPinpast12months	.522	.209	6.213	1	.013	1.686	1.118	2.541
	ConsultedGP4timesormoreinpast12months	.370	.184	4.045	1	.044	1.447	1.009	2.075
	Constant	.016	.225	.005	1	.943	1.016		

a Variable (s) entered on step 1: ConsultedGPinpast12months. b Variable (s) entered on step 2: ConsultedGP4timesormoreinpast12months.

Block 3: Method = Forward Stepwise (Wald)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	44.911	1	.000
	Block	44.911	1	.000
	Model	102.823	7	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	903.302(a)	.118	.167

a Estimation terminated at iteration number 4
because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.228	8	.836

Classification Table (a)

Observed			Predicted		
			Use CAM		Percentage Correct
			No	Yes	
Step 1	Use CAM	No	66	183	26.5
		Yes	46	524	91.9
	Overall Percentage				72.0

a The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
								Lower	Upper
Step 1(a)	Gender	.477	.167	8.181	1	.004	1.612	1.162	2.235
	Age			6.160	2	.046			
	Age(1)	-.331	.193	2.930	1	.087	.718	.492	1.049
	Age(2)	-.644	.265	5.902	1	.015	.525	.312	.883
	Postsecondary	.640	.165	15.064	1	.000	1.896	1.372	2.618
	ConsultedGPinpast12months	.461	.217	4.521	1	.033	1.586	1.037	2.427
	ConsultedGP4timesormoreinpast12months	.464	.190	5.976	1	.014	1.590	1.096	2.306
	Coverage of CAM influences insurance	1.096	.167	42.955	1	.000	2.991	2.155	4.150
	Constant	-.492	.244	4.066	1	.044	.611		

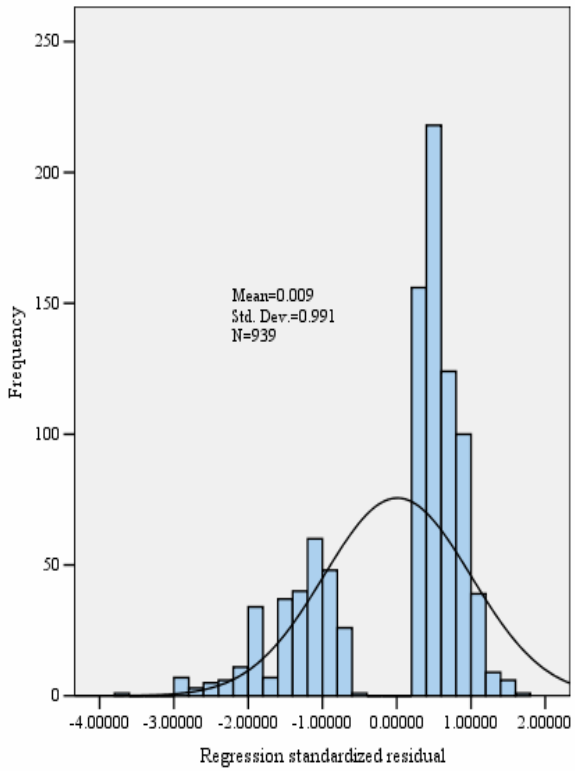
a Variable(s) entered on step 1: Coverage of CAM influences insurance.

Block 4: Method = Forward Stepwise (Wald): none entered Casewise List (b)

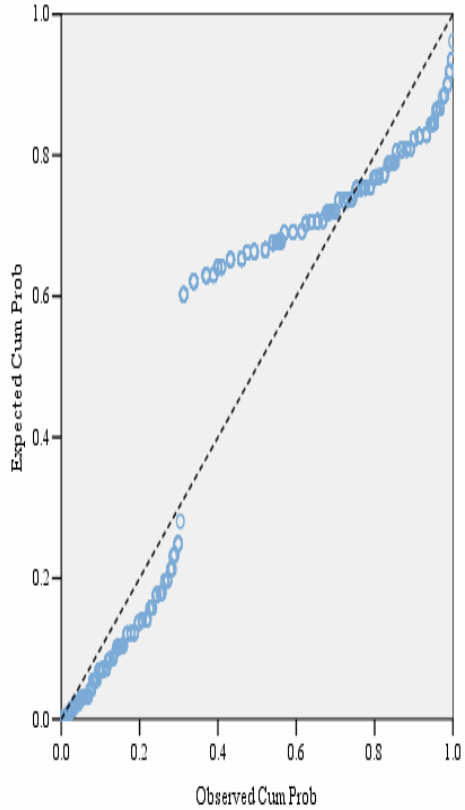
Case	Selected Status(a)	Observed	Predicted	Predicted Group	Temporary Variable	
		Use CAM			Resid	ZResid
5	S	N**	.899	Y	-.899	-2.977
94	S	N**	.899	Y	-.899	-2.977
176	S	N**	.899	Y	-.899	-2.977
177	S	N**	.864	Y	-.864	-2.523
302	S	N**	.934	Y	-.934	-3.753
377	S	N**	.881	Y	-.881	-2.726
547	S	N**	.864	Y	-.864	-2.523
574	S	N**	.899	Y	-.899	-2.977
585	S	N**	.881	Y	-.881	-2.726
683	S	N**	.881	Y	-.881	-2.726
691	S	N**	.899	Y	-.899	-2.977
987	S	N**	.897	Y	-.897	-2.957
1005	S	N**	.897	Y	-.897	-2.957

a: S = Selected, U = Unselected cases, and ** = Misclassified cases. b: Cases with studentised residuals greater than 2.000 are listed.

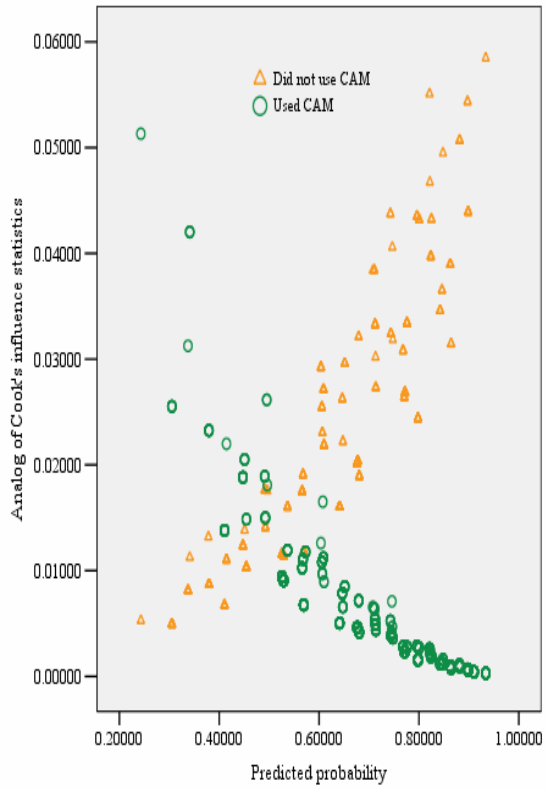
Residual and scatter plot of the predictive probability – Regression analysis



Histogram



Normal P-P Plot of Standardised Residual



Scatter plot