A longitudinal analysis of older Australian women's consultations with complementary and alternative medicine (CAM) practitioners, 1996–2005

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Abstract

Objective: to determine the factors associated with complementary and alternative medicine (CAM) use among older Australian women over time.
Methods: a longitudinal analysis of postal questionnaires completed in 1996, 1999, 2002 and 2005 as part of the Australian Longitudinal Study on Women's Health.
Results: the percentage of women who consulted a CAM practitioner in the years 1996, 1999, 2002 and 2005 were 14.6%, 12.1%, 10.9% and 9.9%, respectively. Use of CAM increased as the number of reported symptoms increased and physical health deteriorated, for non-urban residents compared to urban residents.
Conclusion: use of CAM amongst older women appears to be strongly influenced by poor physical health. There is also a suggestion that lack of access to conventional health care providers increases CAM use. There is also an overall decline in the use of CAM among older women as they age.

Introduction

The rise of CAM: Prevalence of CAM use and profile of CAM users

Complementary and alternative medicine (CAM) is now identified as a major public health issue with important implications for both individual providers and patients as well as health systems more generally [1, 2]. High prevalence rates of CAM use across general populations have been reported for a range of countries including Australia, the USA, Canada and elsewhere [3, 4] and concurrent to this community support has been the development of interest in these medicines from across conventional health care ranks [5].

Research has also identified CAM users, in comparison to CAM non-users, as more likely to be female [6–8]; be aged between 35 and 49 years [3, 6–8]; have a higher income [3, 6]; have a higher level of education [3, 6]; reside in non-urban areas [3]; be in full-time employment [6, 8] and have a poor health status [3,6]. In addition, CAM users appear to employ CAM in conjunction with conventional health services [3, 6, 7].

Older people and CAM use

Given the rapidly ageing population in Australia and elsewhere [9] and the increasing popularity of CAM (as outlined above), it is surprising that examination of older adults' use of CAM had long been neglected by researchers [10]. In fact, only in the last few years has an emerging body of literature begun to explore the use of CAM amongst older adults [9, 11, 12]. Such recent studies [10–14]—housing variations of methodological rigour and definition—have nonetheless illustrated how older adults are significant users of CAM products and therapies (with evidence of approximately between 15% and 25% using some form of CAM therapy and ~40–65% using some form of CAM therapy and/or over-the-counter CAM product) [11, 13, 15], that experiencing chronic conditions (and gaining a sense of control over chronic illness) are common reasons for CAM use amongst

older adults [9, 11] and that higher conventional practice users are also more likely to be using CAM [16].

Likewise, qualitative inquiry has unearthed some similar and related themes highlighting how older people value their access to CAM [17] and how they often perceive CAM as providing a sense of empowerment and control [18] as well as greater time and attention to them as patients [19], all of which is not necessarily experienced during their conventional medical encounters [20].

Despite these insights, recent commentators have identified that although a growing number of older people are using CAM, the reasons for its use and the characteristics of its use are still not well documented [9]—one specific area that has not received attention to date is the investigation of CAM use by a cohort of older people over time.

CAM consumption: longitudinal analysis

Indeed, few studies examining CAM consumption more generally have been longitudinal in design, with most being cross-sectional [16]. The main advantage offered by longitudinal studies (over cross-sectional studies) is the possibility of studying the change over time of an outcome variable (e.g. CAM use) in relation to the change over time of other variables [21]. As such, longitudinal studies can determine within-individual change, while cross-sectional studies can only estimate the between-individual differences in the outcome [22].

Only four studies (of general populations) have reported trend analysis of CAM use over time [23–26]. Eisenberg *et al.* [26] and MacLennan *et al.* [23] report trends in CAM consumption levels in North America and Australia, respectively, but unfortunately these studies used repeated cross-sectional surveys rather than using record linkage across a cohort. Consequently, such investigation is unable to provide information regarding individual users' CAM use over time. Bair *et al.* conducted a longitudinal analysis of CAM use at mid-life among a non-representative multi-ethnic sample of women [25]. However, the study was limited by having a restrictive sample of pre-menopausal and early peri-menopausal women, it was not representative of the wider population of women in the USA, and it was restricted to a follow-up period of only 12 months, a relatively short span of time with which to identify patterns and changes in CAM consumption.

An Australian study reported that mid-age women experiencing more illness over time are more likely to take up CAM than those experiencing no change or better health [24]. Unfortunately, this work only analysed a baseline survey and a single follow-up survey, representing a follow-up time period of 3 years—again, a relatively short span of time with which to identify patterns and changes in CAM use.

To date, no longitudinal studies on older people living in the community have been analysed regarding their use of CAM. There is a clear gap in the knowledge about CAM use over time, especially for older people. This paper reports the findings from a secondary longitudinal analysis of CAM use by a representative sample of older Australian women.

The Australian Longitudinal Study on Women's Health from which our data are drawn was not primarily designed to examine CAM consumption, and as a result the survey data report consultations with alternative health practitioners and does not include the utilisation of over-the-counter CAM products. In addition, the interpretation of CAM use in our study is potentially temporally and geographically variable. Nevertheless, the study reported here is the first longitudinal analysis of CAM consumption amongst a cohort of older women to date and constitutes a significant first step towards addressing the research gap identified in this area.

Methods

Sample

This research was conducted as part of the Australian Longitudinal Study on Women's Health which was designed to investigate multiple factors affecting the health and well-being of women over a 20-year period. In 1996, women in three age groups ('younger' 18–23, 'mid-age' 45–50 and 'older' 70–75 years) were randomly selected from the national Medicare database, with over-representation of women living in rural and remote areas [27]. The focus of this study is women from the older cohort who have been surveyed four times over a 10-year period (1996–05). The baseline survey, survey 1 ($n = 12,432$), was conducted in 1996 and the respondents have been shown to be broadly representative of the national population of women in the target age groups [28]. Survey 2 ($n = 10,434$) was conducted in 1999, survey 3 was conducted in 2002 ($n = 8,646$) and survey 4 was conducted in 2005 ($n = 7,153$). Table 1 illustrates that after completing survey 1,529 participants died and 573 participants withdrew from the study before survey 2 was conducted. There was no statistical difference between those who used CAM and those who did not, in terms of their respective distributions of participant status at survey 2 ($\chi^2 = 8.82$; $P = 0.116$). The distribution of participation status across CAM use is similar for the other surveys as well.

Measures of demographic characteristics

Postcode of residence at the time of each survey was used to classify area of residence as urban or non-urban. Women were asked about their current marital status and the highest educational qualification they had completed.

Measures of health status

The Short-Form 36 (SF-36) Quality of Life questionnaire was used to produce a measure of health status and quality of life [29]. Results of the SF-36 are usually reported in eight subscales from which two summary scores called the Physical Component Score (PCS) and the Mental Component Score (MCS) can be derived [29]. The scores are standardised to a mean of 50 and standard deviation of 10, with higher scores representing better health [30]. Women were asked how often they experienced a list of 17 symptoms (such as back pain, severe tiredness, difficulty sleeping) in the previous

Table 1. Participation status of study participants at survey 2, by CAM use at survey 1

| | CAM use at survey 1 | | | | | | | |
| | No | | Yes | | Missing | | Total | |
Participation status at survey 2	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Responded	8,719	83.8	1,508	85.1	207	79.0	10,434	83.9
Contacted, but did not return survey	392	3.8	76	4.3	13	5.0	481	3.9
Unable to contact	271	2.6	30	1.7	8	3.1	309	2.5
Too frail to respond	87	0.8	11	0.6	8	3.1	106	0.9
Withdrawn from study	474	4.6	81	4.6	18	6.9	573	4.5
Deceased	455	4.4	66	3.7	8	3.1	529	4.3
Total	10,398	100	1,772	100	262	100	12,432	100

$\chi^2 = 8.82$ (df = 5); $P = 0.1163$ (ignoring the missing column).

12 months. Women were also asked whether a doctor had ever told them that they had any of the nine chronic medical conditions listed, such as diabetes and hypertension. A question about having a major personal illness or injury in the previous year was also included.

Measures of health service use

The women were asked about their frequency of use in the previous 12 months (for their own health) of a family doctor or another general practitioner (GP) and a specialist doctor. The women were also asked whether they had been admitted to hospital in the previous 12 months.

Outcome measure

Women were asked whether they had consulted an alternative health practitioner for their own health in the previous 12 months. Women who responded 'yes' were defined as CAM users. Response rates to this question were 97.9% (12,170 out of 12,432) for survey 1, 90.0% (9,387 out of 10,434) for survey 2, 97.7% (8,445 out of 8,646) for survey 3 and 98.1% (7,017 out of 7,153) for survey 4.

Statistical analyses

The demographic characteristics, health status and health service use of CAM users and non-users were compared using chi-square tests for categorical variables and t-tests for continuous variables. In response to the large sample size and multiple comparisons, a P-value <0.005 was adopted for statistical significance [31]. Generalized estimating equations (GEE) were used to conduct longitudinal multivariate analyses. A backward, stepwise elimination method was used to obtain a final model that identified the significant factors associated with CAM use. All analyses were conducted using statistical program SAS [32].

Results

Across the four surveys, the percentage of women who consulted a CAM practitioner in 1996, 1999, 2002 and 2005 was 14.6%, 12.1%, 10.9% and 9.9%, respectively.

There were 6,044 women who answered the question related to consultation with a CAM practitioner at all four survey points. Of these women, none indicated CAM use at all four surveys; 39 (0.6%) indicated CAM use at three surveys; 417 (7.0%) indicated CAM use at two surveys; 1,929 (31.9%) indicated CAM use at one survey and 3,659 (60.5%) indicated at all surveys that they did not use CAM.

The demographic, health service utilisation and health status characteristics of the women, by CAM use, are shown in Table 2. This table presents cross-sectional, univariate analyses for each survey. Across all four surveys, women in non-urban areas were significantly more likely to use CAM. In addition, CAM users reported a significantly higher number of symptoms in all four surveys. CAM users were in poorer physical health across all four surveys, with lower physical health scores, but this was statistically significant in surveys 1, 2, and 3 only. A significantly higher proportion of CAM users reported having specialist visits (survey 1 only), hospital admissions (surveys 1 and 2 only), GP visits (survey 2 only), and self-reported major illness or injury (survey 1 only). There were no statistically significant differences between CAM users and CAM non-users in terms of marital status, level of education, number of chronic illnesses and mental health score.

Table 3 shows the results of the GEE longitudinal multivariate modelling. The only statistically significant factors that predict CAM use are the number of symptoms, physical health score, area of residence and age (time of survey). Specifically, the odds of a woman using CAM increases by 1.05 (95% CI 1.04, 1.07) as the number of reported symptoms increases; decreases by 0.95 (95% CI 0.93, 0.97) for every five-point increase (i.e. improved physical health) in the PCS score; increases by 1.31 (95% CI 1.20, 1.43) for non-urban residents compared to urban residents; and decreases with time, whereas in comparison to survey 1 (age 70–75 years), the odds ratios were 0.85 (95% CI 0.80, 0.92) at age 73–78 years, 0.72 (95% CI 0.67, 0.78) at age 76–81 years and 0.56 (95% CI 0.51, 0.61) at age 79–84 years. Note that interactions with each variable in the final model and time were tested, but none were statistically significant.

Table 2. Demographic, health service utilisation and health status characteristics of older Australian women by CAM use

Characteristics	Survey 1: 1996 CAM user		Survey 2: 1999 CAM user		Survey 3: 2002 CAM user		Survey 4: 2005 CAM user	
	Yes $n = 1,772$ %	No $n = 10,398$ %	Yes $n = 1,135$ %	No $n = 8,252$ %	Yes $n = 917$ %	No $n = 7,528$ %	Yes $n = 693$ %	No $n = 6,324$ %
Area of residence[^,*,#,†]								
Urban	36	41	36	42	36	44	39	45
Non-urban	64	59	64	58	64	56	61	55
Marital status								
Married/*de facto*	57	57	53	51	45	45	37	37
Never married	3	3	3	3	3	3	3	3
Separated/divorced/widowed	40	40	44	46	52	52	60	60
Education								
No formal	33	35	–	–	–	–	–	–
School only	51	51	–	–	–	–	–	–
Trade/diploma	12	10	–	–	–	–	–	–
Tertiary	4	4	–	–	–	–	–	–
Number of GP visits*								
0–2	18	20	13	15	11	12	10	10
3–4	25	27	24	28	24	27	23	27
5+	57	53	63	57	65	61	67	63
Specialist visit (yes)[^]	58	51	48	47	50	46	51	49
Hospital admission (yes)[^,*]	27	23	32	27	30	29	36	37
Major illness/injury (yes)[^]	20	16	17	14	18	16	27	23
No. of symptoms[^,*,†], mean (SD)	5 (3)	4 (3)	4 (3)	3 (3)	5 (3)	4 (3)	6 (3)	5 (3)
No. of chronic conditions, mean (SD)	2 (1)	2 (1)	1 (1)	1 (1)	1 (1)	1 (1)	2 (1)	2 (1)
SF-36 components, mean (SD)								
Physical health (PCS)[^,*]	48 (10)	50 (10)	48 (10)	50 (10)	46 (11)	48 (10)	45 (10)	46 (10)
Mental health (MCS)	50 (10)	50 (10)	51 (10)	51 (9)	52 (9)	51 (9)	51 (11)	51 (10)

[^]Significant association with CAM use in survey 1 ($P < 0.005$).
*Significant association with CAM use in survey 2 ($P < 0.005$).
#Significant association with CAM use in survey 3 ($P < 0.005$).
†Significant association with CAM use in survey 4 ($P < 0.005$).

Table 3. Factors associated with CAM use by older Australian women, derived from a longitudinal analysis using multivariate GEE modelling with backward stepwise elimination.

Factors		Odds ratio	95% CI
Number of symptoms		1.05	1.04, 1.07
SF-36 components	Physical health PCS (5 pt increase)	0.95	0.93, 0.97
Area of residence	Urban	1.00	–
	Non-urban	1.31	1.20, 1.43
Time	Time 1	1.00	–
	Time 2	0.85	0.80, 0.92
	Time 3	0.72	0.67, 0.78
	Time 4	0.56	0.51, 0.61

Discussion

This paper reports the longest follow-up study of a large cohort—tracking over 6,000 women over 10 years—to analyse CAM consultations in the world and is the first longitudinal analysis of CAM consumption amongst a cohort of older women to date.

Our analysis shows that at the age of 70–75 years, women's use of CAM was 15%. This finding is in line with the prevalence rates identified in other research reporting CAM therapy use amongst those aged over 65 both in Australia [23] and elsewhere [11, 14, 15].

Our study also identified that the proportion of CAM users declined over time with only 10% of the women using CAM when aged 79–84 years. The majority of the women who did use CAM typically used it at only one survey time period. It is interesting to note that this decline in utilisation of CAM is counter to the more general trend in CAM use over a similar time period—other Australian research suggests the use of CAM increased slightly in the period 2000–04 across both the general population and female adult users (regardless of age) [23]. While further research is necessary to explore this issue in more detail, it is possible that an increasing lack of disposable income (amongst other factors) in later life may act as a constraint to continued CAM use by this cohort of older Australian women. Indeed, the bulk of CAM therapy available in Australia is located in private practice and requires direct out-of-pocket payments, and previous qualitative research has suggested that the cost of treatment is one significant restriction upon older people's use of CAM services [33].

The most important factor in determining CAM use in our study appears to be physical health, where CAM

consumption increases with poorer physical health. This was evident in the multivariate analysis which showed that women were more likely to use CAM as the number of self-reported symptoms increased and as their PCS score decreased.

Our analysis shows that CAM use was not influenced by the number of chronic illnesses reported. These older women appear to be using CAM sporadically rather than for existing chronic conditions, an interesting finding given that previous research has identified seeking help for chronic conditions and gaining a sense of control over chronic illness as common reasons for CAM use amongst older adults [9, 11, 17].

Area of residence was a significant factor in predicting CAM use, with older women in non-urban areas more likely to use CAM than those in urban areas. This finding is supported by previous research [3, 34] and while there is clearly a need for further empirical investigation to test a number of hypotheses regarding rural/urban CAM consumption, this finding may be due to access issues relating to both conventional and CAM practitioners and services across the urban/rural divide in Australia [35].

Consultation with conventional health care providers (i.e. GPs, specialists) was also significantly higher among CAM users than non-CAM users in our study (in the univariate analysis only). This finding is supported by previous research examining other populations [3, 6] and suggests that older women, while sometimes perceiving CAM as providing features not necessarily dominant in more conventional care (such as empowerment and a sense of active control), are not opting for CAM use in opposition to or as an outright rejection of conventional health services. Instead, they appear to follow a pragmatic approach whereby different treatments or a suite of treatments (from conventional and CAM) are chosen in relation to a particular condition and symptom.

The prevalence rate identified in our study may be affected by a limitation of the study design. In line with previous investigation [36], CAM use is here defined in terms of consultation with an alternative health practitioner and this definition excludes the use of self-prescribed CAM medications which make up a considerable component of CAM use amongst the general public [23]. In addition, the study questionnaire did not define the practitioners to be included under the term 'alternative health practitioner' and provided only a number of examples including chiropractor, naturopath and acupuncturist. Respondents may have different interpretations of this term and might have varied in the range of practitioners they included under this heading. Furthermore, it is also important to remain mindful that the interpretation of the specific question regarding consultations with alternative health practitioners may be subject to temporal and geographical variation (for example, women might have interpreted and answered the question differently at the various survey points across the 10 years under study). All of these limitations are due to the fact that our research is based upon secondary data analysis of a larger survey-based project which was not primarily designed for the purpose of determining CAM consumption [16].

Conclusion

This paper—reporting the first longitudinal analysis of CAM use amongst a cohort of older women in Australia—identifies an overall decline in the use of CAM amongst older women over time. Use of CAM amongst older women appears to be higher for those living in non-urban locations and increased CAM use appears to be strongly influenced by poor physical health.

Key points

- No longitudinal studies of older people living in the community have previously been analysed regarding CAM use.
- The proportion of older women who were CAM users declined over time with only 10% of women using CAM when aged 79–84 years.
- Use of CAM amongst older women appears to be higher for those living in non-urban locations and increased CAM use appears to be strongly influenced by poor physical health.

Acknowledgements

Conflicts of interest

None.

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