



# Prevalence of visits to five types of complementary and alternative medicine practitioners by the general population: A systematic review



Katy L. Cooper<sup>a,\*</sup>, Philip E. Harris<sup>b</sup>, Clare Relton<sup>a</sup>, Kate J. Thomas<sup>a</sup>

<sup>a</sup>School of Health and Related Research, University of Sheffield, Regent Court, 30 Regent Street, Sheffield S1 4DA, UK

<sup>b</sup>Cardiff School of Health Sciences, Cardiff Metropolitan University, PO Box 377, Western Avenue, Cardiff CF5 2YB, UK

## ABSTRACT

### Keywords:

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**Objective:** To systematically review surveys of 12-month prevalence of visits to complementary and alternative medicine (CAM) practitioners for five therapies: acupuncture, homeopathy, osteopathy, chiropractic, and medical herbalism.

**Methods:** Studies were identified via database searches to 2011. Study quality was assessed using a six-item tool.

**Results:** Forty-one surveys across 12 countries were included. Twenty-five (61%) met four of six quality criteria. Prevalence of visits by adults were (median, range): acupuncturists 1.4% (0.2–7.5%,  $N = 27$  surveys), homeopaths 1.5% (0.2–2.9%,  $N = 20$  surveys), osteopaths 1.9% (0.2–4.4%,  $N = 9$  surveys), chiropractors 7.5% (0.3–16.7,  $N = 33$  surveys), medical herbalists 0.9% (0.3–4.7%,  $N = 14$  surveys). Estimates were slightly lower for children and higher for older adults. There was little change over the past 15–20 years.

**Conclusions:** This review summarises 12-month prevalence of visits to CAM practitioners in Europe, North America, Australia, East Asia, Saudi Arabia and Israel. A small but significant percentage of these general populations visit CAM practitioners each year.

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## 1. Introduction

We recently published results of a broad-scale systematic review assessing prevalence of use of complementary and alternative medicine (CAM) within general populations across 15 countries [1]. Estimates of 12-month prevalence of use of any CAM ranged from 9.8% to 76% (based on 32 studies), while estimates of 12-month prevalence of visits to CAM practitioners ranged from range 1.8%–48.7% (based on 33 studies). Though these ranges were wide, estimates of 12-month prevalence of any CAM use (excluding prayer) from surveys using consistent measurement methods showed remarkable stability within some countries, such as Australia (49%, 52% and 52% in 1993, 2000 and 2004 respectively) and USA (36% and 38% in 2002 and 2007).

The focus of the study reported here is to systematically review the subset of these general population studies that reported 12-month prevalence of visits to practitioners for any one of five types of complementary and alternative medicine (CAM): acupuncture, homeopathy, osteopathy, chiropractic, and medical

herbalism. Each of these therapies has established training and governance practices in the countries surveyed, and each claims to utilise a specific diagnostic approach which is independent of Western medical practice [2].

Brief definitions of the five therapies are as follows [2]. Acupuncturists insert small needles into various points in the body. Traditional Chinese acupuncturists use the idea of 'qi' (vital energy) traveling around the body along 'meridians', while Western acupuncturists prefer to think of needle insertion as affecting nerve impulses and the central nervous system. Homeopaths use the principle of treating 'like with like'. Homeopathic remedies are highly diluted and serially succussed substances that if given to a healthy person would produce the symptoms that the remedies are being given to treat. Osteopaths use a system of diagnosis and treatment, usually by manipulation, which mainly focuses on musculo-skeletal problems, though some branches aim to treat a wider spectrum of disorders. Chiropractors treat musculo-skeletal complaints through adjusting muscles, tendons and joints and using manipulation and massage techniques. Medical herbalists use remedies derived from plants and plant extracts to treat disorders and maintain good health.

This review focusses on visits to practitioners rather than self-treatment using over-the-counter products (for example for homeopathic remedies and herbal preparations). This decision was

\* Corresponding author. Tel.: +44 (0)114 2220773.

E-mail addresses: [k.l.cooper@sheffield.ac.uk](mailto:k.l.cooper@sheffield.ac.uk) (K.L. Cooper), [peharris@cardiffmet.ac.uk](mailto:peharris@cardiffmet.ac.uk) (P.E. Harris), [c.relton@sheffield.ac.uk](mailto:c.relton@sheffield.ac.uk) (C. Relton), [k.thomas@sheffield.ac.uk](mailto:k.thomas@sheffield.ac.uk) (K.J. Thomas).

made on the basis that practitioner visits represent significant examples of health behavior, and estimates for this behavior are likely to be better-defined and less prone to recall bias than estimates for self-treatment.

## 2. Methods

### 2.1. Search strategy

The systematic review followed the recommendations in the PRISMA statement [3]. The following databases were searched in February 2011: MEDLINE, Medline in Process, EMBASE, Cochrane Database of Systematic Reviews, Cochrane CENTRAL Register of Controlled Trials, HTA database, Science Citation Index, AMED, and PsycINFO. The search strategy combined terms for: i) complementary and alternative medicines, ii) prevalence, surveys or patterns of use, and iii) population-level or national-level data. The full search strategy is provided in our previous article on prevalence of use of any CAM [1]. The search was restricted to studies published from 1998 onwards. Studies published prior to 1998 were identified from two previous systematic reviews of CAM prevalence [4,5]. Bibliographies of included papers were checked for further relevant studies.

### 2.2. Inclusion and exclusion criteria

Studies were included if they reported 12-month prevalence of overall CAM use and/or visits to CAM practitioners, in addition to prevalence of visits to at least one of five types of CAM practitioner: acupuncturists, homeopaths, osteopaths, chiropractors, and medical herbalists. Prevalence had to be reported over a 12-month retrospective period within a representative general population sample of a nation or a defined geographical area. Surveys of clearly-defined age groups (such as adults, children or older adults) were included. Included studies used survey methods such as structured interviews or self-complete questionnaires. Studies were excluded if they did not report 12-month prevalence, or were not written in English. Studies were also excluded if they were not based on representative samples of the general population; for example, surveys of sub-populations with specific clinical conditions or socio-demographic characteristics (other than age).

### 2.3. Study selection and data extraction

Study titles retrieved by the search were assessed for inclusion by one reviewer and a sample of excluded titles was checked by a second reviewer. Potentially relevant abstracts and full texts were assessed by two reviewers and any discrepancies resolved through discussion. Data were extracted by one reviewer and checked by a second.

### 2.4. Quality assessment

There is no agreed set of criteria for assessing the quality of health-related surveys. As part of our wider systematic review on prevalence of overall CAM use, we devised a six-item, literature-based quality assessment tool comprising important and assessable criteria of methodological quality [1]. This was applied to each of the included studies. The criteria covered by the quality assessment tool include 1) whether CAM-use questions were clearly described and number of therapies/questions reported; 2) whether the survey was piloted (this was assumed for government surveys); 3) whether the sample size was  $\geq 1000$  and/or a CAM-specific sample size calculation was reported; 4) whether the reported response

rate was  $\geq 60\%$ ; 5) whether data were weighted to population characteristics (where appropriate) to reduce non-response bias; and 6) whether a 95% confidence interval or standard error were reported for the main prevalence estimates.

## 3. Results

### 3.1. Number of surveys included

The search identified 2312 unique citations. Of these, 2208 were excluded at the title and abstract stage, while the full texts of 104 references were examined. Forty-four references were included in the review. These covered 49 reports (for different age groups) from 41 independent surveys conducted in 12 countries: USA, Canada, Australia, UK, Germany, Denmark, Italy, Israel, Singapore, Japan, South Korea and Saudi Arabia. In terms of surveys of adults or all ages, there were 27 surveys reporting visits to acupuncturists, 20 for homeopaths, 9 for osteopaths, 33 for chiropractors, and 14 for medical herbalists (Table 1). The number of surveys reporting practitioner visits by children ranged from 0 to 4 for the different therapies, while the number reporting visits by older adults ranged from 0 to 8.

Of the 49 surveys included in our previous publication on any CAM use [1], 8 did not report data on visits to any of the five types of practitioner covered here, and so were excluded. Data on individual practitioner visits from the remaining 41 surveys are included here.

### 3.2. Prevalence of visits to five types of CAM practitioner

Table 1 outlines the 12-month prevalence of visits to each of the five types of practitioner (as well as to any CAM practitioner) for the 41 surveys across 12 countries. Survey data is ordered by country, then survey type (government, other national, or sub-national), then year of survey. Data are grouped by age: adults or all ages; children; and older adults. Further detail (sampling and data collection methods for each survey) is provided in our earlier publication [1].

Table 2 provides a summary of the median and range for prevalence of visits to each type of practitioner, by age group. Estimates from surveys of adults or all ages were as follows (median and range): acupuncturists 1.4% (0.2–7.5%,  $N = 27$  surveys), homeopaths 1.5% (0.2–2.9%,  $N = 20$  surveys), osteopaths 1.9% (0.2–4.4%,  $N = 9$  surveys), chiropractors 7.5% (0.3–16.7%,  $N = 33$  surveys), and medical herbalists 0.9% (0.3–4.7%,  $N = 14$  surveys). Estimates for prevalence of visits by children were slightly lower, ranging from 0.2% for acupuncturists to 2.4% for chiropractors (based on 4 surveys each), while estimates for older adults were similar or slightly higher, ranging from 0.0% for homeopaths (based on 1 survey) to 8.4% for chiropractors (based on 8 surveys). Where possible, the following narrative identifies key data on prevalence of visits to CAM practitioners by national populations from data obtained using consistent methodologies.

#### 3.2.1. Visits to acupuncturists

The five US government surveys estimated that between 0.6% and 1.4% of the adult (or all ages) population had visited an acupuncturist in the previous 12 months. Rates were similar over the years surveyed (1995–2007). Rates for other government surveys were similar: 1.6% for the UK (2001), 1.0%–2.3% for Canada (1994–2005), and 2.0%–2.8% for Australia (1993–2004). Estimates for visits by children were lower (0.1%–0.3% across US and Australian surveys), while estimates for older adults tended to be higher, although many of these were from smaller or non-government sources.

**Table 1**  
Prevalence of visits to five types of CAM practitioners across 12 countries.

Country	Survey type	Year of survey	Name of survey <sup>c</sup>	Sample size	Sample ages (% males)	Meets $\geq 4$ quality criteria	Visited acupuncturist (%)	Visited homeopath (%)	Visited osteopath (%)	Visited chiropractor (%)	Visited medical herbalist (%)	Visited any CAM practitioner (%)	Reference
<b>Adult or all ages</b>													
USA	Government national	2007	NHIS	23,393	18+ (NR)	Yes	1.4	1.8	–	8.6 <sup>a</sup>	–	16.2	Barnes (2008) [9]
		2002	NHIS	31,044	18+ (NR)	Yes	1.1	1.7	–	7.5	–	12.5	Barnes (2004) [10]
USA	Other national	1999	NHIS	30,801	18+ (NR)	Yes	1.4	–	–	7.6	–	–	Ni (2002) [11]
		1996	MEPS	16,068	18+ (47)	Yes	0.6	0.4	–	3.3	1.8	8.3	Druss (1999) [12]
		1995–6	MIDUS	4242	25–74 (43)	Yes	1.1	–	–	10.9	–	–	Honda (2005) [13]
		1997		2055	18+ (48)	Yes	0.9	0.6	–	9.9	1.8	19.5	Eisenburg (1998) [14]
		1997		1500	18+ (NR)	–	2.0	–	–	16.0	–	–	Landmark (1998) [15]
		1994		2056	18–64 (49)	Yes	0.4	–	–	9.3	–	9.4 <sup>b</sup>	Paramore (1997) [16]
		1990		1539	18+ (52)	Yes	0.4	0.2	–	7.1	0.3	12.3	Eisenberg (1993) [17]
USA	Sub-national	NR		1035	18+ (49)	–	–	–	–	15.7	–	–	Astin (1998) [18]
		1999		1059	18+ (NR)	–	1.2	0.7	–	6.7	0.8	8.6	Arcury (2004) [19]
UK	Government national	1998		1584	18+ (38)	Yes	–	–	–	8.7	–	–	Oldendick (2000) [20]
		2005	HSE	7630	16+ (45)	Yes	–	1.7	2.7	2.2	1.8	12.1	Hunt (2010) [8]
UK	Other national	2001	NOS	1794	16+ (47)	Yes	1.6	1.9	1.9	1.6	0.8	10.0	Thomas (2004) [21]
		1999		1204	18+ (45)	–	–	–	0.7	0.5	–	–	Ernst (2000) [22]
UK	Government sub-national	1998		2669	18+ (43)	Yes	1.6	1.2	4.3	3.6	0.9	13.6	Thomas (2001) [23]
		1993		676	18+ (47)	Yes	0.5	1.7	4.4	2.1	0.9	8.5	Thomas (1993) [24]
		1986	CHS	4268	18+ (NR)	Yes	0.2	–	–	0.8 <sup>a</sup>	–	2.6	Yung (1988) [25]
Canada	Government national	2001–5	CCHS	400,055	12+ (49)	Yes	2.3	2.3	–	1.4	0.6	12.4	Metcalfe (2010) [26]
		1998–9	NPHS	14,150	18+ (46)	Yes	–	–	–	11.0	–	17.0	Millar (2001) [27]
		1994–5	NPHS	17,626	15+ (NR)	Yes	1.0	2.0	–	11.0	–	15.0	Millar (1997) [28]
Canada	Government sub-national	1988	AEAS	464	18+ (49)	–	–	–	–	10.8	–	–	Northcott (1993a) [29]
		1979	AEAS	439	18+ (47)	–	–	–	–	8.2	–	–	Northcott (1993b) [29]
Australia	Other national	2005		1067	18+ (49)	Yes	7.5	2.9	3.5	14.6	4.7	44.1	Xue (2007) [30]
Australia	Government sub-national	2004	SAHOS	3015	15+ (49)	Yes	2.1	0.5	0.4	16.7	1.9	26.5	MacLennan (2006) [7]
		2000	SAHOS	3027	15+ (49)	Yes	2.8	1.2	0.4	16.7	0.9	23.3	MacLennan (2002) [31]
Israel	Government national	1993	SAHOS	3004	15+ (49)	Yes	2.0	1.2	0.2	15.0	0.4	20.3	MacLennan (1996) [32]
		2003–4	INHIS	2365	21+ (44)	–	1.6	1.3	–	0.3 <sup>a</sup>	–	5.8	Niskar (2007) [33]
Israel	Sub-national	2000		2505	45–75 (47)	–	2.9	2.9	–	1.3	–	9.8	Shmueli (2004a) [34]
		1993		2003	45–75 (48)	–	1.3	1.8	–	0.4	–	6.1	Shmueli (2004b) [34]
Denmark	Government national	1987	DICE	4753	16+ (NR)	–	1.5	–	–	–	–	10.0	Rasmussen (1990) [35]
Singapore	Sub-national	2002		468	18+ (46)	–	5.2	–	–	–	–	–	Lim (2005) [36]
Germany	Sub-national	1997–2001		4291	20–79 (49)	–	–	1.0	–	0.9	2.4	6.0	Schwarz (2008) [37]
Japan	Other national	2001		1000	20–79 (49)	Yes	6.7	–	–	7.1 <sup>a</sup>	–	–	Yamashita (2002) [38]
Saudi Arabia	Sub-national	2003		1408	Mean 36; SD 14 (39)	Yes	0.3	–	–	–	–	23.9	Al-Faris (2008) [39]
South Korea	Other national	2006		3000	30–69 (50)	–	–	–	–	0.5	–	–	Ock (2009) [40]
<b>Children</b>													
USA	Government national	2007	NHIS	9417	0–17 (NR)	Yes	0.2	1.3	–	2.8 <sup>a</sup>	–	–	Barnes (2008) [9]
		1996	MEPS	6262	0–17 (52)	Yes	0.1	0.03	–	0.8	0.2	1.8	Davis (2003), Yussman (2004) [41,42]
USA	Other national	1994		980	1–17 (NS)	Yes	0.1	–	–	1.9	–	–	Paramore (1997) [16]
Australia	Government sub-national	2004	SAHOS	911	0–15 (46)	Yes	0.3	–	–	6.4	–	–	Smith (2006) [43]



**Table 2**  
Summary of prevalence of visits to five types of CAM practitioners.

Age group	Visited acupuncturist (%)		Visited homeopath (%)		Visited osteopath (%)		Visited chiropractor (%)		Visited medical herbalist (%)		Visited any CAM practitioner (%)	
	N surveys	Median % (range)	N surveys	Median % (range)	N surveys	Median % (range)	N surveys	Median % (range)	N surveys	Median % (range)	N surveys	Median % (range)
Adults or all ages	27	1.4 (0.2–7.5)	20	1.5 (0.2–2.9)	9	1.9 (0.2–4.4)	33	7.5 (0.3–16.7)	14	0.9 (0.3–4.7)	25	12.3 (2.6–44.1)
Children	4	0.2 (0.1–0.3)	2	0.7 (0.0–1.3)	0	–	4	2.4 (0.8–6.4)	1	0.2 (–)	1	1.8 (–)
Older adults	8	4.8 (0.4–9.6)	1	0.0 (–)	2	3.0 (0.0–5.9)	8	8.4 (0.0–17.8)	0	–	2	26.2 (17.5–34.9)

non-response bias, and (6) reporting of 95% confidence interval or standard error for key prevalence estimates. Of all surveys, 61% met four or more quality criteria; these percentages were 79% for government-sponsored surveys and 45% for other surveys. However, although there was a trend towards more government surveys meeting each individual criterion, the only marked difference observed was for the piloting criterion, where we made the assumption that all government-sponsored surveys were piloted.

#### 4. Discussion

This report provides a comprehensive and systematic review of surveys reporting 12-month prevalence of visits by general populations to five key types of CAM practitioner. This complements our previous report which systematically reviewed prevalence of any CAM use and visits to any CAM practitioner by general populations [1]. The data reported here include estimates from 41 surveys across 12 countries. Data were well reported for visits to acupuncturists, homeopaths and chiropractors (reported in 27, 20 and 33 of the 36 surveys of adults or all ages, respectively). Data on visits to osteopaths and medical herbalists were slightly less well-reported (within 9 and 14 surveys of adults or all ages).

The survey data indicated that a small but significant percentage of the general population (adult or all ages) had visited each type of CAM practitioner over the previous 12 months, with median estimates of 1.4% for acupuncturists, 1.5% for homeopaths, 1.9% for osteopaths, 7.5% for chiropractors and 0.9% for medical herbalists. Practitioner visits by children were less frequent but still substantial for some therapies (median estimate of 2.4% for chiropractors) while estimates of visits by older adults were similar to or slightly higher than estimates for adults or all ages.

Data were obtained from surveys which also reported overall 12-month prevalence of any CAM use and/or visits to any CAM practitioner. Therefore, surveys only reporting visits to one of the included types of therapist but not reporting overall CAM use or visits were not included in this review. This was due to the design of this review which focussed on studies reporting this overall data, and is a limitation of this review. Conversely, data from the types of survey included here (many of which were government surveys or large population surveys) may be expected to be of higher quality than data from surveys of a single therapy. A further limitation is the exclusion of studies not reported in English, although English-language reports of surveys from any country were included.

The quality of methodological reporting was variable; 25 of 41 surveys (61%) met four or more of six quality criteria. These rates were higher for government surveys, though this was mainly due to our assumption that all government surveys were piloted. Our earlier report showed wide variation in estimates of 12-month prevalence of any CAM use (range 9.8%–76%) and visits to CAM practitioners (range 1.8%–48.7%), which was likely due in part to the variation in the way CAM is defined for data collection. Conversely, data reported here on visits to individual types of practitioner were more consistent with narrower ranges. This formed part of our rationale for focusing on prevalence of visits to practitioners rather than self-treatment; we did not include estimates of homeopathy or medical herbs which included use of over-the-counter remedies (or which were ambiguous on this point) since we felt that data on practitioner visits would be better-defined and less prone to recall bias.

Periodic surveys of general populations are important to monitor changing patterns in CAM use. Where data on trends over time are available, these appear to indicate little change in

**Table 3**  
Summary of the methodological quality of surveys.

Quality criterion	All survey reports N = 41		Govt. sponsored survey reports N = 19		Other CAM survey reports N = 22	
	n	%	n	%	n	%
1. CAM-use questions clearly described and number of therapies/questions reported	27	66	13	68	14	64
2. Piloting of survey reported (or assumed for government surveys)	29	71	19	100 (assumed)	10	45
3. Sample size ≥1000 and/or CAM-specific sample size calculation reported	34	83	17	89	17	77
4. Reported survey response rate ≥60%	26	63	14	74	12	55
5. Data weighted to population characteristics (where appropriate) to reduce non-response bias	23	56	12	63	11 <sup>a</sup>	50
6. 95% confidence interval or standard error reported for main prevalence estimates	20	49	9	47	11	50
<b>Four or more criteria met</b>	<b>25</b>	<b>61</b>	<b>15</b>	<b>79<sup>b</sup></b>	<b>10</b>	<b>45</b>

<sup>a</sup> Including one survey (Al-Faris et al., 2008) with 95% response reported where weighting was deemed unnecessary.

<sup>b</sup> This includes the assumption that the piloting criterion is met by 100% of government surveys.

prevalence of visits per therapy over the past 15–20 years for these five types of CAM. This, and the relative consistency of estimates across the different countries despite differences in local legislation and access, suggest a pattern of consistent healthcare seeking behavior, rather than a response to fashions or trends [6]. Recent reports in Australia, UK, and USA [7–9] emphasised the need to improve communication between physicians and patients about their use of CAM; openness and non-judgemental communication is needed to determine the risks of drug interactions and other potential complications [7]. In summary, this review provides a comprehensive overview of prevalence of visits to key types of CAM practitioners by general populations in Europe, North America, Australia, East Asia, Saudi Arabia and Israel.

#### Author contributions

All authors contributed to the design of the review, extraction and compiling of the data, drafting and critical revision of the manuscript.

#### Conflict of interest statement

None.

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