

# Prevalence of use of complementary/alternative medicine: a systematic review

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Reported are the results of a systematic review of the prevalence of use of complementary/alternative medicine. Computerized literature searches were carried out in four databases. Twelve surveys thus found were selected because they dealt with the utilization of complementary/alternative medicine in random or representative samples of the general population. Data were extracted in a predefined, standardized way. Prevalence of use of complementary/alternative medicine ranged from 9% to 65%. Even for a given form of treatment such as chiropractic, as used in the USA, considerable discrepancies emerged. The data suggest that complementary/alternative therapies are used frequently and increasingly. Prevalence of use seemed to depend critically on factors that were poorly controlled in surveys of complementary/alternative medicine. The true prevalence of use of complementary/alternative medicine in the general population remains uncertain.

**Keywords:** alternative medicine, utilization, prevalence; review, literature.

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*Voir page 256 le résumé en français. En la página 256 figura un resumen en español.*

## Introduction

Complementary/alternative medicine (CAM) has been described as “diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, satisfying a demand not met by orthodoxy, or diversifying the conceptual frameworks of medicine” (1). Approximately 1500 articles on CAM are published annually in the literature covered by MEDLINE (2). In the United Kingdom the market for herbal and homoeopathic remedies and aromatherapy oils increased by 41% between 1992 and 1996 (3). In Germany a herbal remedy (St John’s wort) is now the most frequently prescribed drug for depression. In the USA, the sales of St. John’s wort rose by 2800% between 1997 and 1998, and the total market for medicinal botanicals was worth US\$ 3.87 billion in 1998 (4). Most experts agree that the interest in and practice of CAM are driven mainly by consumer pressure.

The prevalence of CAM use by defined populations of patients, e.g. those suffering from rheumatic diseases (5), acquired immunodeficiency syndrome (AIDS) (6) or cancer (7), and paediatric patients (8), is fairly well established and relatively easy to quantify. However, it may be more important to consider the use of CAM in the population at large, particularly as more than 50% of CAM users are not

ill but evidently employ CAM in order to prevent illness (9). Reliable prevalence figures for the general population could form the basis for much discussion on CAM, especially as regards its integration into routine health care.

The present article reports the results of a systematic review, summarizing the available data on the prevalence of CAM use among random or representative samples of general populations.

## Methods

The MEDLINE, EMBASE, Cochrane Library and CISCOM databases were searched covering the period from the dates of their inception to the end of 1997. The following keywords were used: acupuncture, alternative medicine, aromatherapy, chiropractic, complementary medicine, herbalism, homoeopathy, hypnotherapy, massage therapy, naturopathy, osteopathy, phytomedicine, reflexology, relaxation therapy, surveys, yoga. In addition, the author’s own files and those of 12 other experts were consulted. Furthermore, the following journals not listed in or only recently admitted to electronic databases were hand-searched for relevant publications (1993–97): *Acupuncture in Medicine*, *Alternative and Complementary Medicine*, *Alternative Therapies in Health and Medicine*, *British Journal of Homeopathy*, *Complementary Therapies in Medicine*, *Fitoterapia*, *Forschende Komplementärmedizin*, *NaturaMed*. The bibliographies of all articles thus found were scanned for further relevant publications.

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To qualify for inclusion, a survey had to address the prevalence of CAM, i.e. the percentage of people using it. The surveys had to be based on random or representative samples of the general population of a nation or a defined geographical area. "Representative" was taken to mean an unselected sample from the general public with no evidence of a systematic difference in demographics compared to the general population. Surveys on subpopulations (such as patients with a named condition, e.g. AIDS, or individuals with a given characteristic, e.g. being vegetarian) were excluded. Publication in a language other than English was not grounds for exclusion. All identified surveys were read in full by the author and their data were extracted and validated according to standardized, predetermined criteria (Table 1).

## Results

More than 100 papers on surveys of CAM use were found, but most were excluded because the samples were neither random nor representative. Twelve surveys (9–20) met the criteria and were included in the review. Although Fisher & Ward (20) mentioned several further surveys as being representative, none of them fulfilled the present criteria. Most of the included material refers to recent publications. The key data of all surveys are summarized in Table 1.

The survey by Haidinger & Gredler in Austria (10) employed an unorthodox sampling method: 65% of the interviews were carried out in Vienna, 22% in Lower Austria and the rest elsewhere in the country. Nevertheless, the demographic description of the sample implied that it was representative of the Austrian population. The results of the survey suggested that acupressure was the most prevalent form of CAM. Galvanic current treatment, the third most popular therapy, is not normally considered as a form of CAM. Generally speaking, lifetime prevalences of CAM use were low. This could have been because the country's law does not permit non-medically trained complementary/alternative therapists to practise CAM. On the other hand, the survey was carried out more than 10 years ago and may not reflect the current situation (6).

The first survey by Eisenberg et al. (11) was based on a sample from across the USA, obtained by random telephone dialling. It suggested that the one-year prevalence of CAM use was 34%. On average, each user made 19 visits a year to CAM providers, involving costs exceeding US \$500 per head; middle-aged, female, well-educated whites were the most frequent users; 72% of users did not inform their physicians about their use of CAM. It was deduced that visits to CAM providers outnumbered visits to primary care physicians and that the total costs amounted to around US\$ 14 billion. The data also suggested that 18% of CAM use was for psychiatric indications (10% for anxiety, 8% for depression).

In Vickers' survey, in the United Kingdom (12), the description of the sample was insufficient

and prevalence data were not provided for specific therapies. The results suggested a one-year prevalence of 8.5% for all forms of CAM use, a considerably lower value than those reported elsewhere. This was possibly because of national differences or because the survey was conducted during a difficult economic period in the United Kingdom, where CAM is usually paid for privately.

In Scotland, Emslie et al. (13) asked people whether they would consider using CAM in the future. There appeared to be a high potential demand, particularly for osteopathy, acupuncture and aromatherapy. However, the sample size was relatively small.

MacLennan et al. (14) employed a rigorous methodology to ensure that their random sample was representative of the general population of South Australia. They also evaluated the reliability of their questionnaire by reinterviewing a subsample by telephone. However, the questionnaire was somewhat confusing as far as the categories of remedies were concerned. For instance, vitamin or mineral supplementation may not be considered universally as CAM, while Chinese medicines, herbal medicines and ginseng, mentioned as distinct categories, overlap. The high prevalence of CAM use (48.5%) suggested by the survey may partly reflect the misclassification of treatments.

Chi et al. (15) conducted interviews among 1358 members of the National Household Sample in China (Province of Taiwan), and asked the participants whether they would use Chinese medicine. It appeared that 10% were current users of this type of CAM and that 31% would consider using it.

Panamore sent questionnaires to 3450 US citizens (16). This sample originated from the National Access to Care (NAC) Survey and was representative of the country's population. Participants were asked whether, in the last year, they had used chiropractic, massage, relaxation or acupuncture, for which the prevalences were 6.8%, 3.1%, 1.3% and 0.4% respectively.

An opinion poll commissioned by the German Association of Pharmaceutical Manufacturers (17) indicated that the overall prevalence of CAM use was 65% in 1996; in 1970 the corresponding figure had been 52%. However, it was unclear whether lifetime or one-year prevalence was assessed. In all age groups, women used CAM more frequently than men. In cases of serious disease, only 3% of the population said they would rely exclusively on CAM. Only 22% had obtained CAM through prescriptions from their physicians. People seemed to be motivated to use CAM largely because they had misgivings about pharmacotherapy: 84% considered that the risk of adverse effects of synthetic drugs was moderate or great. It was considered important or very important by 75% that the cost of CAM should be reimbursed by the German health insurance system.

In the Canadian National Population Health Survey, 17 626 individuals aged  $\geq 15$  years were asked about their use of CAM during the preceding

Table 1. Results of selected surveys on the use of complementary/alternative medicine in general populations

First author (year)	Nature of sample/survey	Response rate (%)	Description of sample	Question(s) asked	Prevalence figures by therapy
Haidinger (1988)	Representative, <i>n</i> = 1620, personal interview	99.6	53% female 33% aged ≤ 30 years 35% aged 31–50 years 32% aged > 50 years From across Austria	Have you ever used any of the following therapies? (21 named)	19.5% acupressure 17.3% autosuggestion 13.3% galvanic currents 12.4% yoga 12.1% homoeopathy 11.3% reflexology 9.6% acupuncture 9.5% chiropractic
Eisenberg (1993)	Random, <i>n</i> = 1539, telephone interview	67	Random sample from USA 48% female 34% aged > 50 years 82% white Sample recruited through random digit dialling	Have you ever used any of the following therapies? (16 named) If so, have you done so within the last 12 months?	Used in the last 12 months: 34% at least one CAM 13% relaxation techniques 10% chiropractic 7% massage
Vickers (1994)	Random, <i>n</i> = 921, postal questionnaire	78	Adults from UK electoral registers	Have you consulted a practitioner of any of the following therapies (6 named) or any other specialist in complementary medicine in the past 12 months?	Combined one-year prevalence of acupuncture, chiropractic, osteopathy, homoeopathy, herbal medicine and hypnotherapy was 8.5%. Lifetime use of some form of CAM was estimated to be 33%.
Emslie (1996)	Random, <i>n</i> = 500, postal questionnaire	70	Individuals aged ≥ 18 years from Grampian Region, Scotland, stratified by age, sex, and district of residence	Would you ever consider using any of the following therapies? (8 named)	45% osteopathy 44% acupuncture 40% aromatherapy 33% chiropractic 32% reflexology 32% homoeopathy 30% hypnotherapy 25% herbalism
MacLennan (1996)	Random and representative, <i>n</i> = 3004, personal interview	73	Multistage systematic area sample of persons aged ≥ 15 years living in Adelaide (Australia) and major country centres (over 1000 inhabitants)	Which of the following have you used in the past year: evening primrose oil, ginseng, herbal medicines, vitamins, homoeopathic remedies, Chinese medicines, aromatherapy oils, mineral supplements, other health products (not calcium, iron or prescribed vitamins)?	<i>Remedies bought</i> 37.7% non-prescribed vitamins 9.9% herbal medicines 9.2% mineral supplements 7.8% evening primrose oil 4.4% homoeopathic remedies 3.5% aromatherapy oils 3.0% ginseng 1.8% Chinese medicine <i>Therapists visited</i> 15% chiropractor 5% naturopath 2% acupuncturist 1.2% homoeopath 0.8% iridologist 0.7% reflexologist 0.6% aromatherapist 0.4% herbalist
Chi (1997)	Random, <i>n</i> = 1358, national household sample, personal interview	53	48% female 30% aged 18–29 years 46% aged 30–49 years 16% aged 50–64 years 8% aged ≥ 65 years From across China (Province of Taiwan)	Do you use or would you use Chinese medicine?	9.6% current users and 31% would consider using Chinese medicine.
Paramore (1997)	Representative, <i>n</i> = 3450	75	Sample from the National Access to Care Survey. From across the USA.	In the last year, did you use any of the following therapies? (4 named)	6.8% chiropractic 3.1% therapeutic massage 1.3% relaxation techniques 0.4% acupuncture
Häussermann (1997)	Representative sample of the German population, <i>n</i> = 2647	n.m. <sup>a</sup>	German citizens aged > 16 years	n.m.	Overall prevalence was 65% (55% for men, 74% for women)
Millar (1997)	Representative, <i>n</i> = 17 626, personal interview	n.m.	The National Population Health Survey, Canada. One person was selected at random from each household.	In the last 12 months, have you seen an alternative health care provider such as an acupuncturist, naturopath, homoeopath or massage therapist?	15% had used some form of CAM; the middle-age group made most use, women more than men, higher-educated individuals more than lower.
Landmark Report (19) (1998)	Random sample of adults in the USA	n.m.	US citizens aged > 18 years who were covered by health insurance.	n.m.	42% had used CAM in the past year 17% herbal therapy 16% chiropractic 14% massage
Astin (1998)	Random sample of adults in the USA, <i>n</i> = 1500, representative of the population of the USA	69	National Family Opinion Survey (USA), age ≤ 18, 80% white, 51% female, 30% high school or less, 12% ≤ US\$ 12 500 yearly income	Have you used any of the following forms of CAM within the past year? (17 named)	40% had used CAM in the past year 16% chiropractic 8% lifestyle diet 7% exercise 7% relaxation
Eisenberg (1998)	Random, <i>n</i> = 2055, telephone interview	60	Random sample of population of USA, 52% female, age distribution and recruitment of sample as in 1990 survey (11), 77% white	As in 1990 survey (11)	Used in the last 12 months: 42% at least one CAM 13% relaxation technique 12% herbal medicine 11% massage 11% chiropractic

<sup>a</sup> n.m. = not mentioned.

year (18). A total of 15% had seen a CAM provider. Usage was disproportionately high among women, people who had received higher education, and people in the age range 25–64 years. The relatively low prevalence is probably because the study only considered CAM provided by practitioners rather than including self-prescribed use.

In the USA a study on public perceptions of alternative care (19) was based on telephone interviews with 1500 adults in a random sample of households throughout the country during November 1997. Respondents were required to be  $\geq 18$  years of age and had to be currently covered by some type of health insurance or health care plan. The results suggested a one-year prevalence of CAM use amounting to 42%. The four most popular therapies were herbal therapy (17%), chiropractic (16%), massage therapy (14%) and vitamin therapy (13%); 74% of CAM users said they used these treatments as an adjunct to mainstream medicine.

Astin reported a survey of 1035 randomly selected individuals in the USA who responded to a postal questionnaire (20). Some type of CAM had been used by 40% of the respondents during the previous year. The most popular therapies were chiropractic (15.7%), lifestyle diet (8.0%), exercise (7.2%) and relaxation (6.9%), which were used most frequently for the following conditions: chronic pain, anxiety, chronic fatigue syndrome, sprains, strains, addictions, rheumatic diseases, headaches, depression, digestive problems and diabetes. The three most powerful predictors of CAM use were high educational level, poor health status, and a holistic approach to matters of health.

The only reliable longitudinal data derive from the 1997 update (9) of the survey conducted by Eisenberg et al. in 1990 (11). Over this period the one-year prevalence of CAM use increased from 33.8% to 42.1%. Medical herbalism was the therapy showing the largest increase (380%). In both surveys about 40% of users disclosed CAM use to their physicians. Expenditure for CAM increased by 45%, reaching US\$ 21 billion in 1997. The most popular CAM modalities in 1997 were relaxation techniques, herbal medicine, massage and chiropractic.

## Discussion

These data show that there are considerable uncertainties about the true prevalence of CAM among the general populations of countries. The prevalences reported above varied from 9% (9) to 65% (14). The investigations included in the present review differed markedly in their methodologies, origins and results. There were marked discrepancies in prevalences even within particular countries. In the USA, for example, prevalences in the range 10–16% (9, 11, 19, 20) contrasted with a figure of only 6.8% for chiropractic revealed by a comparatively large survey reporting on named therapies (16).

This degree of variance is not easily explained. There is no indication that in the USA or anywhere else the popularity of CAM in general or chiropractic in particular has decreased during the period concerned. Indeed, there is evidence from the USA that the prevalence of CAM use increased, while that of chiropractic remained stable between 1990 and 1997 (9, 11). Furthermore, there is good evidence from Germany (14) and elsewhere that the popularity of CAM has risen steadily since 1945.

With the exceptions of Paramore's study (16), dealing with only four named forms of CAM, and the investigation by Chi et al. (15), focusing on only Chinese medicine, the surveys were affected by the complex problem of defining CAM. This was bound to lead to considerable variance in prevalences. Most experts would probably agree that electrotherapy (10), exercise (11, 21), mineral supplementation (14) and psychotherapy (21) are mainstream forms of therapy that should not come under the umbrella of CAM. In the interest of clarity, therefore, future studies should assess specifically named therapies rather than CAM in general.

Some surveys were aimed at determining lifetime prevalence of CAM use (10, 15), while others used one-year prevalence data (11, 12, 14, 16, 18, 19, 21). It could be argued that the telephone surveys (9, 11) were biased in favour of the affluent, and that this could have inflated the prevalence values. One survey (13) assessed whether participants would consider CAM, while all the others asked whether CAM had actually been used. Response rates were reported as ranging from 100% (10) to 53% (15), but in some surveys none were given (17, 18, 19). Clearly, future surveys should:

- deal with named therapies rather than with CAM in general;
- be based on samples representative of general populations;
- assess point and one-year prevalences;
- be based on adequate response rates.

On the basis of the data outlined in this review it is problematic to speak of true prevalences of CAM use within the general population of any country. Despite the unreliability of the data, however, several interesting and consistent trends emerge. All the surveys agree that the most likely users of CAM are female, affluent, middle-aged, well-educated and white. It should be pointed out, however, that most of the surveys were conducted in industrialized countries. No surveys conducted in developing countries matched the inclusion criteria. The typical user of traditional medicines in developing countries would almost certainly have different characteristics. A substantial proportion of CAM users do not inform their doctors of this fact. The majority employ CAM as an adjunct to mainstream medicine for the prevention rather than the treatment of illness. The costs of CAM can be considerable, yet its popularity seems to be increasing.

Why do people turn towards CAM? Which forms of CAM are helpful for which conditions? What is the role of the placebo effect and the therapeutic relationship? What risks are associated with the use of CAM? None of these questions can be answered conclusively at present (22–26) because the evidence is too patchy and often contradictory. This

strongly suggests that more research of increased rigour is required into all aspects of CAM.

The prevalence of the use of CAM is likely to vary according to factors that are not fully understood. The available data are both contradictory and unreliable. In order to generate more valuable information, future surveys should exclude the drawbacks of the investigations published to date. ■

## Résumé

### La place des médecines parallèles : analyse systématique

Il semble que les médecines parallèles soient de plus en plus populaires. Cette analyse systématique récapitule les connaissances actuelles concernant la fréquence de leur utilisation dans la population générale de divers pays.

On a effectué des recherches bibliographiques dans quatre bases de données informatiques (MEDLINE, EMBASE, bibliothèque Cochrane et CISCOS). Ont été incluses dans l'étude les enquêtes qui faisaient état d'un recours aux médecines parallèles dans des échantillons randomisés ou représentatifs de la population générale. Les données ont été extraites de ces articles par une méthode définie à l'avance et normalisée.

Douze enquêtes ont satisfait aux critères retenus. La fréquence du recours aux médecines parallèles a montré des variations marquées, allant de 9 % à 65 %. Même pour une forme donnée de traitement, telle la chiropractie aux Etats-Unis d'Amérique, des disparités importantes sont apparues. Néanmoins, les données disponibles laissent à penser que ces médecines sont employées fréquemment et de plus en plus.

L'importance de ces dernières semble reposer sur un certain nombre de facteurs décisifs mal contrôlés dans les enquêtes. A l'heure actuelle, la fréquence réelle du recours aux médecines parallèles dans la population générale est mal connue.

## Resumen

### Examen sistemático de la prevalencia de las medicinas complementarias/alternativas

Al parecer las medicinas complementarias/alternativas gozan de creciente aceptación. En la presente revisión sistemática se resumen los conocimientos actuales sobre la prevalencia de su uso en la población general de diversos países.

Se llevaron a cabo búsquedas computarizadas en la literatura contenida en cuatro bases de datos (MEDLINE, EMBASE, la Biblioteca Cochrane y CISCOS), teniendo en cuenta los estudios en que se hablaba del uso de las medicinas complementarias/alternativas en muestras aleatorias o representativas de la población general. Se empleó un procedimiento predefinido y normalizado para seleccionar los datos de esos documentos.

En total satisficieron los criterios precitados 12 estudios. La prevalencia del recurso a medicinas

complementarias/alternativas fue muy variada: entre un 9% y un 65%. Incluso para una misma modalidad de tratamiento como la quiropráctica, según se emplea en los Estados Unidos, se observaron considerables discrepancias. No obstante los datos disponibles indican que las terapias complementarias/alternativas se utilizan con frecuencia y de forma creciente.

Las estimaciones de la prevalencia de las medicinas complementarias/alternativas parecen depender de forma crucial de varios factores que no se controlan bien en las encuestas. Por el momento es difícil establecer la verdadera prevalencia de las medicinas complementarias/alternativas en la población general.

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