

# Use of Complementary and Alternative Medicine by Children in the United States

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**Background:** Current estimates of pediatric complementary and alternative medicine (CAM) use range from 10% to 15%. These estimates are derived from children sampled at health care facilities, with chronic conditions, and/or from countries other than the United States.

**Objective:** To provide a population-based estimate of the prevalence of pediatric CAM use in the United States.

**Design:** We used the 1996 Medical Expenditure Panel Survey (MEPS), a nationally representative survey of the noninstitutionalized US population. The survey asks parents if their children used alternative care practitioners within the previous year. Our analysis included children younger than 18 years and accounted for the complex sampling design of MEPS.

**Results:** Weighted for the US population, pediatric CAM use was 1.8% (95% confidence interval, 1.3%-2.3%). Participants who used CAM were found in each age category, and the mean age was 10.3 years; 76.8% were white, 54% were female, 32% lived in the West, 66% lived in a metropolitan statistical area, and 36% lived at 100% to 199% of the poverty level. Bivariate  $\chi^2$  analysis shows that CAM use increased with age ( $P=.006$ ) and was twice as common in children not living in a metropolitan statistical area ( $P=.02$ ).

**Conclusions:** The use of CAM among US children, as measured by the MEPS, is far less prevalent than has previously been asserted. With such disparate estimates, future CAM research efforts would benefit from a consensus regarding what practices constitute CAM and how these practices should be measured.

*Arch Pediatr Adolesc Med.* 2003;157:393-396

THE DEFINITION of complementary and alternative medicine (CAM) is not well established. It is generally accepted to be the integration of nonallopathic methods into preventive or acute health care. This definition may include numerous sources of therapy, including meditation, herbal remedies, and homeopathy. The use of these therapies has enjoyed a niche among various cultures for hundreds, indeed thousands, of years. Partly because many of these therapies predate methodical scientific trials, the safety and effectiveness of such treatments have not been well studied. Given the recent rise in popularity of "natural" and "holistic" remedies and foods, it seems likely that growing numbers of children would receive at least part of their health care through these methods. Indeed, a recent review of studies of alternative medicine in children worldwide suggests that the prevalence of CAM use among children may be growing.<sup>1</sup> Despite this concern on the part of Ernst,<sup>1</sup>

both the definitions of what constitutes CAM and the survey methods used vary among the studies examined, making comparisons between them difficult. To determine the importance and impact of CAM on children, an accurate estimate of its prevalence in the United States is necessary.<sup>2</sup>

Current published estimates of CAM use in children range from 8% to 15%.<sup>3-10</sup> Unfortunately, most of these studies involved children who may not be reflective of the general population of children in the United States. Many of the studies were conducted in countries other than the United States, where attitudes toward unconventional therapies may be different. Additionally, most studies measure CAM use in children who have chronic conditions or who were sampled at health care facilities. Faw et al<sup>10</sup> surveyed 69 parents of children with cancer in Texas and primarily examined the use of dietary supplements. Following this 1977 report, children with cancer were interviewed in Australia ( $n=48$ ) and Seattle, Wash ( $n=106$ ).<sup>5,6</sup> In 1990, Jensen<sup>3</sup> pub-

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lished a report on Norwegian children's use of a wide variety of alternative therapies during their experience with atopic dermatitis or psoriasis. A 1990 report of children from Australia, New Zealand, and Canada with juvenile arthritis examined use of copper bands, diet, chiropractic therapy, acupuncture, and skin creams for rheumatologic complaints.<sup>8</sup> It has been shown that adults with certain chronic or terminal diseases (eg, arthritis or cancer) are more likely to seek alternative methods of treatment.<sup>11</sup> This may also be true among children, especially those with conditions for which conventional medical treatment proves inadequate. Estimates of CAM use in these populations are probably not generalizable to all children.

Two estimates of CAM use in less restrictive pediatric populations were published in 1994. Verhoef et al<sup>9</sup> reported that 12.7% of 0- to 11-year-olds and 24.4% of 12- to 17-year-olds had consulted an alternative care practitioner, including chiropractors, within the previous 6 months. These estimates were based on population-based survey data collected in rural Alberta, Canada. Spiegelblatt et al<sup>12</sup> surveyed 1911 children from a university clinic-based population, of which 11% had used CAM therapies at some point. The article concludes that alternative medicine is "an aspect of child health care that cannot be ignored." The study by Verhoef et al is the only one that limited its definition of CAM use to a specific time period as opposed to lifetime (or since diagnosis) use of CAM therapies.

Previous studies of CAM in children used various measures of CAM, frequently among highly selected populations and in cultural settings that may define CAM in different ways. Our objective was to generate a generalizable population-based estimate of CAM use among US children and to describe the demographic characteristics of CAM users.

## METHODS

This report analyzes information from the 1996 Medical Expenditure Panel Survey (MEPS), Household Component, for which 6262 children were surveyed.<sup>13</sup> The MEPS is designed to provide policymakers, health care administrators, and others with up-to-date, comprehensive information about health care use and costs in the United States. The MEPS collects data on the specific health services that Americans use, how frequently they use them, the costs, and payment methods. The MEPS also reports on the cost, scope, and breadth of private health insurance held by and available to the US population. The Household Component of the MEPS contains the core survey data. The 1996 survey oversampled Hispanic and black families to allow inferences about these demographic groups.

The 1996 Household Component survey included questions about the use of unconventional therapies. To determine this usage for children, parents were shown a card, AP-1, that listed CAM methods. While parents viewed the card, they were asked the following question:

In order to get as complete a picture as possible of all sources of health care, we would also like to ask about the use of other forms of health care, including treatment you may have previously told me about, such as the treatments shown on this card. Frequently this type of care is referred to as complementary or alternative care. During the calendar year 1996, for health reasons, did (person) consult someone who provides these types of treatments?<sup>13</sup>

The AP-1 card includes the following list of treatments:

- Acupuncture
- Nutritional advice or lifestyle diets
- Massage therapy
- Herbal remedies purchased
- Bio-feedback training
- Training or practice of meditation, imagery, or relaxation techniques
- Homeopathic treatment
- Spiritual healing or prayer
- Hypnosis
- Traditional medicine, such as Chinese, Ayurvedic, American Indian, etc
- Other treatment

Although the MEPS did not include chiropractic therapies in this survey question, they are included in other portions of the survey. To be complete, we chose to liberalize our estimate of CAM users by including participants who answered yes when asked, "Was a chiropractic practitioner used in the previous year?" We justify the addition of chiropractic therapies because, like other types of treatments listed above, chiropractic therapies have not been studied in children, and pediatric use is considered by many to be unconventional.<sup>2</sup>

Statistical analysis was done using Stata statistical software, version 7 (Stata Corp, College Station, Tex). The sampling design of the MEPS requires adjustments to be made for clustering and stratification, and our weighted analysis accounted for this complex design. After calculating the point prevalence of CAM use among children surveyed for the 1996 MEPS, bivariate  $\chi^2$  analysis was used to examine use of CAM according to age category, sex, race, census region, metropolitan statistical area, and poverty status.  $P < .05$  was considered significant. The poverty measure used was the MEPS poverty category variable, which was derived from family size and income and grouped families in relation to federal poverty thresholds for that year (\$15911 for a family of 4 in 1996).<sup>14</sup> The Institutional Review Board of the Medical University of South Carolina, Charleston, reviewed and approved this project.

## RESULTS

When weighted, the sample of 6262 participants younger than 18 years surveyed for the MEPS represents 71 million children in the United States. The total number of childhood CAM users in the sample was 101. This gives an unweighted prevalence of CAM use of 1.6%. The point-prevalence estimate of CAM use in US children in 1996 was 1.8% (95% confidence interval, 1.3%-2.3%).

Among children, CAM users are older, with a mean age of 10.3 years compared with 8.5 years in nonusers ( $P < .001$ ). Of childhood CAM users, 54.3% were female, 34.5% were aged 15 to 17 years, and 76.8% were white. Nearly 36% lived at 100% to 199% of the poverty level; 66.4% lived in metropolitan statistical areas, and 31.9% lived in the West (**Table**).

The authors of the MEPS sample design consider statistical analysis of groups of fewer than 100 participants within MEPS to be unreliable for estimation purposes. This constraint, combined with low absolute cell sizes within categorical variables in this data set, limited our ability to conclusively define the likely predictors of CAM use in children. The demographic most strongly associated with CAM use in children was age category; CAM use increased with age. With a prevalence of 3.5%, older

**Demographic Breakdown of Children in the 1996 Medical Expenditure Panel Survey\***

Demographic Characteristic	% of Children			P Value‡
	CAM Users	Population	CAM Prevalence†	
Sex				
Male	45.7	51.6	1.6	.34
Female	54.3	48.4	2.0	
Age group, y				
0 to <1	2.6	5.2	0.9	.006
1 to 4	18.4	22.5	1.4	
5 to 9	16.4	27.9	1.0	
10 to 14	28.1	27.2	1.9	
15 to 17	34.5	17.2	3.5	
Race				
White	76.8	65.1	2.1	.12
Hispanic	10.6	14.8	1.3	
Black	7.3	15.6	0.8	
Other	5.3	4.5	2.1	
Poverty status, % of poverty level				
<100	13.5	20.8	1.1	.17
100-199	35.8	22.5	2.8	
200-399	31.6	33.6	1.7	
≥400	19.1	23.1	1.5	
Region				
Northeast	9.6	18.4	0.9	.28
Midwest	26.3	23.6	2.0	
South	32.2	34.3	1.7	
West	31.9	23.7	2.4	
Urban status				
MSA	66.4	79.9	1.5	.02
Not MSA	33.6	20.1	2.9	

Abbreviations: CAM, complementary and alternative medicine; MSA, metropolitan statistical area.

\*Values represent proportions of weighted totals in each group. Unweighted sample totals are 101 CAM users and 6262 total children.

†Overall prevalence of CAM use is 1.8%.

‡P values represent bivariate  $\chi^2$  analysis of CAM use by each demographic group.

adolescents used CAM nearly 4 times more than did children younger than 12 months (prevalence, 0.9%). In fact, children aged 15 to 17 years were 2.6 times more likely to be CAM users than were all other age categories combined (95% confidence interval, 1.5-4.5). Also statistically significant was the difference between rural and urban status (Table). These data showed that the prevalence of CAM use among children not living in metropolitan statistical areas was twice that of children living in metropolitan statistical areas (2.9% vs 1.5%;  $P = .02$ ).

White children constituted the majority of those using CAM, with a prevalence of 2.1%. Although not statistically significant when all races were included, the prevalence among black children (0.8%) was less than half of that among white children. Another large but not statistically significant difference among CAM users compared with nonusers was the percentage of children living at 100% to 199% of the poverty level. Of this group, 2.8% used CAM in 1996, a rate nearly twice that of the other poverty categories. Data broken down by region within the United States showed that CAM use was highest in the West (2.4%) and lowest in the Northeast (0.9%).

An additional analysis of pediatric CAM use in relation to parental CAM use was also performed. Seventy-one percent of CAM-using children had a CAM-using parent. Additionally, the prevalence of CAM use among children whose parents used CAM was 9.9%, compared

with 0.6% among children whose parents did not use CAM ( $P < .001$ ).

The proportion of childhood CAM use in this estimate that is attributable to the use of chiropractic therapies is substantial. When users of chiropractic therapies were excluded from the estimate, the weighted point prevalence fell from 1.8% to 1.2% (95% confidence interval, 0.8%-1.7%). Once separated out, however, this measure represented a small and statistically unreliable sample size (unweighted sample <100).

**COMMENT**

Recent public interest in CAM could imply an increasing acceptance and use of these therapies. Based on the data from the 1996 MEPS, CAM use among US children is far lower than previous surveys have found. In this nationally representative sample of children, less than 2% reported using CAM in 1996.

The MEPS differs from other estimates of CAM in important ways. The survey question asks whether participants consulted a CAM provider in the previous year. This question does not ascertain use of self-prescribed therapies. All but 1 of the previous estimates referenced do not make CAM use contingent on consultation with a provider. Undoubtedly, differences between definitions of CAM use account for a portion of the disparity between this and

### What This Study Adds

The use of CAM by children in the United States undoubtedly affects their health care. Current estimates of CAM use among children rely on limited studies. Our analysis helps fill the gap in our knowledge by offering a population-based estimate of CAM use in children.

The extent of the use of CAM by children remains unclear. The estimate of use from the MEPS is remarkably different than estimates from previous surveys. Our ability to arrive at evidence-based decisions regarding CAM use in children is limited by this apparent discrepancy. Until we arrive at better measures of CAM use in children, it will continue to prove difficult for practitioners to formulate effective plans for pediatric health care delivery.

previous estimates. However, this difference does not explain all of the disparity between this and previous studies, especially considering that Verhoef et al<sup>9</sup> found substantially higher rates of CAM use among Canadian children using a definition similar to that used in the MEPS.

The MEPS is population based, whereas most other surveys of CAM use relied on health care facilities to recruit participants. Previous surveys have used samples that are likely to overrepresent children with chronic disease and frequent users of health care.

Finally, the MEPS survey question differs from many other surveys in its measurement of CAM use in the previous year rather than lifetime use. Use of CAM in the last year will lead to a lower estimate of use than a lifetime estimate. However, to the extent that CAM use varies with the age of the child and changes over time, this estimate may be more useful in providing care to children.

These findings have many implications for the way we understand CAM use among children, both for clinical applications and future research. The use of CAM by children in the United States appears to be smaller than previously estimated when defined by use of an alternative health care provider. If total childhood CAM therapy use is greater than this point-prevalence estimate, then a significant proportion of CAM therapies employed by children in the United States are outside the guidance of a practitioner. Pediatricians should be vigilant in seeking out this information on an individual basis during routine health maintenance visits.

These findings also have important implications for future research. The data provide a baseline estimate of CAM use among children in the United States. Current and future studies of this kind can now more precisely measure trends in CAM use, even if defined solely as use of a CAM practitioner. With regard to the definition of CAM in future studies, it is relevant to note the difficulty with which we make conclusions from this data. The MEPS definition of CAM use undoubtedly misses a significant proportion of the CAM-using population, among adults as well as children. A standard measure of CAM use should include use of practitioners or methods and should unambiguously state the therapies included in the definition of CAM. Additionally, biases inherent in questions that poll different groups should be

minimized through use of a more comprehensive definition that can capture CAM therapies that may be ethnically associated.

### CONCLUSIONS

The 1996 MEPS provides a remarkably low estimate of CAM use among noninstitutionalized children in the United States—1.8% during 1996. Despite the low percentage of US children using CAM therapies in this survey, we should not underestimate the effect CAM use may have on those children actually engaging in CAM therapies. Further research is necessary to better define the populations that are using CAM, as well as the risks and benefits of individual therapy types. For these reasons, it is important to standardize our measures of CAM use so that we can make appropriate decisions for health care services. This will allow development of recommendations that can guide pediatric practitioners in our use of anticipatory guidance in the office setting.

Accepted for publication November 27, 2002.

This study was supported in part by grant CFDA 93.895 from the Bureau of Health Professions, Health Resources and Services Administration, Rockville, Md.

This study was presented at the Southern Society for Pediatric Research annual meeting, New Orleans, La, February 21, 2002, and at the Pediatric Academic Societies annual meeting, Baltimore, Md, May 4, 2002.

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