



ABSTRACT

Introduction: The purposes of this descriptive study were to: (a) describe the use of complementary and alternative medicine (CAM) practices for children as reported by their parents, and (b) to develop a CAM screening tool.

Method: A convenience sample of 191 parents was obtained from 3 primary care settings within a midwestern, metropolitan area. The questionnaire consisted of: (a) seven screening questions, (b) a list of specific CAM therapies used by children and by parents, (c) six open-ended questions about sick child care, and (d) a demographic section.

Results: Thirty-three percent of parents reported using CAM for their child within the past year, most commonly citing infant massage, massage therapy, vitamin therapy, and botanical products. Analysis revealed that White parents who used CAM for themselves and had children school-age and older were significantly more likely to provide CAM for their child. Chi-square analyses between the responses to selected screening questions and use of CAM were statistically ($P = .001$) significant but identified only 24% of the parents who used CAM for their children.

Discussion: Pediatric nurses should ask parents and children about CAM use in an open manner that promotes discussion. Further refinement of the screening tool is needed.

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The Use of Complementary and Alternative Health Care Practices Among Children



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There is a growing interest in the use of complementary and alternative health care practices within the United States (Dokken & Sydnor-Greenberg, 2000). Both professionals and the public are exposed to articles on the subject in professional journals and lay magazines, and numerous products are available in various stores. Complementary and alternative medicine (CAM) is used increasingly by adults (Eisenberg et al., 1998), though little has been documented about CAM use among children, especially in the Midwest (Breuner, Barry, & Kemper, 1998; Friedman et al., 1997). This study was designed to describe the use of these practices with children and to develop a screening tool for use in the primary care setting.

DEFINITION OF TERMS

Complementary implies care that occurs along with traditional health care, whereas alternative suggests therapies that are used instead of traditional therapies (National Center for Complementary and Alternative Medicine, 2000). For consistency, the terms "complementary and alternative medicine" are used in this article. This is the terminology adopted by the National Institutes of Health, as evidenced by the titling of the National Center for Complementary and Alternative Medicine (NCCAM). CAM therapies most commonly include massage, acupuncture, chiropractic, homeopathy, hypnosis, vitamins, dietary supplements, herbal products, spiritual healing, and prayer.

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BACKGROUND

It has been recommended that inquiries about nontraditional healing practices for both health promotion and health problems be part of every patient history (Armishaw & Grant, 1999; Eisenberg, 1997). This recommendation is based on the findings of numerous studies that have documented the use of CAM by adults (Brown & Marcy, 1991; Eisenberg et al., 1998; Eisenberg et al., 1993; Elder, Gillcrist, & Minz, 1997). A follow-up telephone survey revealed that the use of CAM by adults increased from 33% in 1990 to 42% in 1997 (Eisenberg et al., 1998). In general, the use of CAM by adults has been reported more among women, persons with chronic health problems, and persons with a higher level of education and income. Less than 40% of the adults who used CAM had discussed the use with their primary care provider (Eisenberg et al., 1998; Eisenberg et al., 1993).

Brown & Marcy (1991) surveyed 100 adult members of a health plan in the northwestern United States about the use of 50 different herbal or plant products. Everyone in the study had used one or more products. Individuals also mentioned the use of botanicals for some child-specific conditions, including diaper rash, colic, teething, and cradle cap.

What do we know about the use of CAM in children? In Quebec, Canada, 11% of the parents of 1911 children reported using CAM for their children (Spigelblatt, Laine-Ammara, Pless, & Guyver, 1994). The CAM practices most frequently cited were chiropractic and homeopathy. Characteristics of these parents included the following: having children older than 12 months; fear of side effects of traditional medications; and having a child with persistent health problems. In addition, the parents tended to use CAM for themselves, and there was a higher level of education among the mothers.

In Florida, Friedman et al. (1997) surveyed 161 parents of children with and without cancer. There were no reported differences in the use of child CAM between the two groups (45% of the children with cancer versus 42% in those without cancer). The types of practices reported most frequently included prayer, exercise, spiritual healing, and massage.

A survey of 157 homeless youth, ages

14 to 21 years, in the northwestern United States revealed that 70% stated they had used CAM (Bruener, Barry, & Kemper, 1998). The youths reported selecting CAM because the therapies were "natural," low cost, effective, and recommended by friends. The youths also reported prior negative experiences with physicians.

Information was collected from parents of 251 children admitted to the hospital for common acute medical illnesses in New Zealand (Armishaw & Grant, 1999). Eighteen percent of the children had received CAM treatment during the illness prior to admission. Treatment varied by ethnic group and included homeopathy, naturopathy, chiropractic, aromatherapy, spiritual healing, massage with oils, and herbal remedies.

RESEARCH METHOD & DESIGN

For this descriptive study, parents were approached in the waiting rooms of three private pediatric offices located in the metropolitan area of a midwestern city. Parents were recruited for the study if their child was between 1 to 18 years of age. The research was approved by the university's Institutional Review Board and informed consent was obtained from the parents.

Parents were offered a small recruitment incentive consisting of a \$5 gift certificate upon completion of the questionnaire. No identifiers were included on the questionnaires except for site location.

The variables investigated included the age of the child, education level of the parent, income level, race, geographic location of residence (rural versus urban), and parent's reported use of CAM for his or her child and himself or herself.

A literature review was performed prior to questionnaire development. No information on reliability or validity of items was described in any of the studies that mentioned use of a tool for child CAM use. Categories of items selected for CAM therapy for this study were commonly mentioned in the literature and were used in previous studies (Eisenberg et al., 1993; Friedman et al., 1997).

The instrument was given to a panel of three child health experts to establish content validity. The instrument was then piloted with four parents, and minor wording changes were made. The

final questionnaire consisted of: (a) seven screening questions; (b) a checklist of specific CAM therapies used for the children; (c) six open-ended questions about parent therapy for common child health problems, (d) a checklist of specific CAM therapies used by the parents for their own health, and (e) a demographic section.

The list of CAM therapies included prayer, exercise, relaxation, meditation, infant massage, massage, herbs and plant products, vitamins, chiropractor, homeopathy, biofeedback, hypnosis, acupuncture, acupressure, nutritional supplements, spiritual healing, prayer, and exercise. Parents were asked several open-ended questions about what they typically did to care for their child when they had a "cold" or infection or a chronic health problem.

DATA ANALYSIS

Data were analyzed using SPSS version 9.0 software. Frequencies were compiled for all variables. Next, the demographic variables were cross-tabulated (contingency tables) with the responses to the CAM practices. Chi-square analyses were performed on the responses to the initial screening questions with the responses to the use of specific CAM therapies obtained in the later questions. The short answer responses to the open-ended questions were reviewed for use of child CAM therapy, and the various home practices were summarized.

RESULTS

The convenience sample of 191 parents reported 440 children who ranged in age from 2 weeks to older than 18 years, with a mean number of 2.4 children per parent respondent. The mean age of the children was 7.1 years, while the median age category of the oldest child in the family was school-age (ages 6-12). More than 93% of the participating parents were female and 80% were White (see Table 1). Family income ranged from less than \$25,000 (10.5%) to greater than \$60,000 (34%), with the median salary in the \$40,000-\$59,000 category. Ninety percent of the parents had private insurance, 6.8% used either Medicaid or the state child health insurance program (CHIP), and 1.6% reported no insurance. Only 19.4% of the parents had not achieved additional education beyond high school.

TABLE 1 Parent demographic data

Characteristic	n	%
Gender		
Female	179	93.7
Male	12	6.3
Race		
White	153	80
African American	33	17
Asian	2	1
Other	3	1.5
Geographic Location		
Urban	137	71.7
Rural	51	26.7
No. of Children		
1	42	22
2	85	44.5
3	42	22
4	15	7.9
5 or more	7	3.6
Family income		
<\$25,000	20	10.5
\$25,000-\$39,000	42	22
\$40,000-\$59,000	56	29.3
≥\$60,000	65	34
Missing	9	4.7
Education		
Some high school	5	2.6
High school diploma	32	16.8
Some college/trade	75	39.3
College graduate	62	32.5
Graduate degree	15	7.9

Analysis of the demographic variables revealed significant differences between the parents at the three sites in terms of age, education and income level, and race. Yet, when the use of the various child CAM therapies was analyzed, there was no difference by site alone.

Parents were asked if they had used CAM therapies for their child within the last 12 months and also if they had ever used CAM for their child. The percentage of parents who had used CAM for one of their children within the past year was 33%, and 49% reported using it at all. The most commonly reported CAM practices used by parents for their children included infant massage, massage therapy, vitamin therapy (other than multivitamin), and herbal or plant product (see Table 2).

Prayer, exercise, relaxation techniques, and nutritional supplements were excluded from the CAM cate-

TABLE 2 Parent report of child CAM and other therapy

Therapy	Ever used n (%)	Within 1 year n (%)
Infant massage	55 (29)	27 (14)
Massage therapy	26 (14)	20 (11)
Vitamin therapy	24 (13)	13 (7)
Herbal/plant product	19 (10)	13 (7)
Meditation/imagery	11 (6)	8 (4)
Chiropractic	8 (4)	4 (2)
Homeopathic	7 (4)	6 (3)
Spiritual healing	3 (1.5)	2 (1)
Biofeedback	2 (1)	1 (0.5)
Acupuncture	2 (1)	0
Acupressure	2 (1)	0
Hypnosis	1 (0.5)	0
Nutritional supplement*	27 (14)	17 (9)
Prayer*	129 (68)	89 (47)
Exercise*	52 (27)	36 (19)
Relaxation*	36 (19)	24 (13)

Percentages may add up to more than 100% because more than one selection was possible.
*Items not included in CAM.

gories because the written comments by parents revealed descriptions of routine child-rearing, health care and religious practices. For example, relaxation was eliminated from the CAM category because the parents' description of it was the equivalent to having the child "sit still and settle down" rather than a systematic relaxation effort. Nutritional supplements included child products often recommended by pediatric nurse practitioners for oral fluid replacement and calorie supplements. In the study by Eisenberg et al. (1998), the use of prayer and spiritual healing as CAM was differentiated by whether it was performed by the individual or performed by others for a health concern. Similarly, in this current study, prayer was mentioned by 47% of the parents, but the description revealed prayer primarily before meals and/or at bedtime for general health and well-being.

Initial analyses of the data revealed very little difference between the parents who reported the use of any child CAM therapy versus nonusers. However, when infant massage was excluded, χ^2 analyses revealed statistically significant differences in the

TABLE 3 Parent use of CAM for self

Therapy	Ever used n (%)
Massage	20 (10.5)
Vitamin therapy	21 (11.0)
Herbal/plant product	37 (19.4)
Meditation/imagery	18 (9.4)
Chiropractic	27 (14.1)
Homeopathic	4 (2.1)
Spiritual healing	12 (6.3)
Acupuncture	3 (1.6)
Hypnosis	1 (0.5)
Nutritional Supplement*	12 (6.3)
Prayer*	95 (49.7)
Exercise*	46 (24)
Relaxation*	32 (16.8)

Percentages may add up to more than 100% because more than one selection was possible.
*Items not included in CAM.

overall use of CAM by parents with certain characteristics: parents who had used CAM themselves ($P = .001$), parents of children 6 years and older ($P = .01$), and parents who were White ($P = .015$). No differences were noted by income, office site, parental residence (urban vs. rural), or level of education. When infant massage was excluded from the analyses, the percentage of parents using CAM for their children within the past year was 24.5% and 31% for ever using.

However, the use of a particular therapy varied by specific demographic characteristics. For example, parents who reported the use of herbs for their children were significantly older ($P = .02$), had a higher level of education ($P = .017$), had a higher income, and none were African American. Vitamin use was reported more by White parents ($P = .016$). Younger mothers (younger than 30 years) were more likely to report having ever used infant massage. Overall, the use of infant massage ever used by parents did not vary by site or race. Of the 27 families who currently had an infant, 13 (48%) reported use of infant massage.

Forty-one percent of parents reported using a CAM therapy for themselves at some time. The most commonly reported parent therapies included herbs, chiropractor visits, vitamin therapy, and massage (see Table 3). In general,

parents who were older than 39 years were significantly more likely to use CAM therapies for themselves than were younger parents.

The second purpose of the study was to develop a screening tool to assess for parental use of CAM therapies for their children (see Table 4). Of the seven screening questions, two were eliminated (question 1 and 5), because they had no relationship with the report of child CAM use in the checklist. The first question was eliminated because the open-ended responses later indicated that doing something "special" was equated with being sure the child "ate well, rested, and got exercise." Similarly, responses about home remedies included activities such as giving chicken soup and covering the child's ears.

A number of χ^2 analyses were performed between the responses to the screening items with use of a specific CAM therapy or with ever using any CAM therapy. There was a statistically significant difference with those indicating "yes" on at least one of the five retained screening questions with later documentation of child CAM use ($P = .001$). There was also a statistically significant difference with those indicating "yes" on the special vitamin use screening question (Question 6) with later indication of vitamin use ($P = .001$), between those indicating "yes" to the parental CAM use screening question (Question 7) and later indication of child CAM use ($P = .006$), and between those indicating "yes" to the child CAM use screening question (Question 4) with later documentation of parent CAM use ($P = .017$). Although there was a statistically significant difference with responses to the screening questions about herb use (Question 2), homeopathy use (Question 3), and child CAM use (Question 4) with later documented child herb ($P = .001$), homeopathy ($P = .001$), and CAM use ($P = .001$), one cell in each analysis had less than five subjects.

Analysis of the open-ended questions on the management of health problems (sore throat and "colds", ear infections, asthma, eczema, attention deficit disorder) yielded numerous written comments about home remedies, health care professional recommendations, and CAM therapies used. For infant massage, 15 parents reported

TABLE 4 Screening questions for child CAM use

Question	Response
1. Are you doing anything special to keep your child healthy or to manage a health problem?	()Yes ()No
2. Do you give your child any herbal or plant preparations?	()Yes ()No
3. Do you give your child any homeopathic preparations?	()Yes ()No
4. Do you use any unconventional or alternative types of care or therapies for your child?	()Yes ()No
5. Do you use any home remedies for your child?	()Yes ()No
6. Do you use any special vitamin therapy for your child?	()Yes ()No
7. Do you use any unconventional treatments, alternative types of care, or therapies for yourself to stay healthy or to manage a health problem?	()Yes ()No

its use for general calming/relaxing/sleeping promotion, while 10 parents reported its use for colic, "gas," or pain. Child massage therapy was used for musculoskeletal complaints (8), stress reduction/relaxation (5), headache (5), asthma (1), and reflexology (1), with "different points" for asthma and diarrhea. There were 17 comments about the use of herbs or plants: five listed the use of echinacea, and three mentioned an herbal product for attention deficit hyperactivity disorder (ADHD) or for mood. There were 15 comments about vitamin therapy (other than multivitamin), and 10 parents reported the use of vitamin C for their children. Comments about the use of chiropractors for their child were offered by 6 parents. The child health indications they gave included vertebral alignment, ear infection, ear fluid, allergies, colic, and asthma.

DISCUSSION

These findings demonstrate that health care professionals must ask about the use of CAM practices with more than one question for clarification or confirmation. In this study, several parents responded in the negative to the vitamin screening question, but then responded affirmatively to either vitamin use on the checklist or on the open-ended question by indicating that they used vitamin C for their children for "cold" and sore throat care.

In response to the screening question of parental use of any unconventional treatments or alternative care for child, only 8% responded affirmatively. This is vastly different from the 33% that

gave supporting evidence for such practices on the checklist. Using the terms "unconventional" or "alternative" may not be appropriate, because when a person uses a therapy, that person no longer considers the therapy "alternative," but views it as an acceptable practice. The therapy has become a strategy and, possibly, the norm (Dokken & Sydnor-Greenberg, 2000).

Similarly, 17% of parents reported positively to the screening question about use of "unconventional treatment or alternative care" for self. Later, in response to additional questions on the checklist, 41% of parents reported the use of at least one type of CAM therapy.

Therefore, further refinement of the screening tool used in this study is needed. Additional work is necessary to establish construct validity and reliability. For instance, 27% of the parents answered affirmatively to the "special vitamin" screening question but later detailed questions indicated that "special vitamin" to the parent often meant the use of standard multivitamins rather than megavitamin therapy or a single vitamin such as Vitamin C or E. A larger sample of parents who provide specific CAM practices for their children is needed. Possible strategies include recruiting parents and adolescents at stores that specialize in "health food" including vitamin and nutritional supplements and at chiropractic offices.

This study has several limitations. First, with the convenience sample, generalizability is limited. Second, the sample was biased toward those families that use traditional health care be-

cause the data were collected in the waiting room of pediatric offices. Third, parental report would not have yielded information about adolescent use of supplements that teens had not shared with their parents. Also, the sample was highly educated and well insured. In addition, this was a relatively healthy population. The parents reported a total of 75 chronic conditions for their 440 children with 20% of parents reporting asthma, 12% reporting attention deficit hyperactivity disorder, and 8% reporting eczema. Only one parent identified having a child with a severe developmental delay and no parent identified a child with cancer. In this sample, a number of the CAM therapies were used infrequently for the children, including hypnosis, acupuncture, acupressure, and biofeedback (with 1% or less ever using them). This finding may reflect regional and cultural influences since parental use was also low.

It is very important that pediatric nurses increase their awareness about the use of CAM in their community and facilitate communication between health care providers and families about various practices in a nonjudgmental manner. The nurse practitioner should always ask the families what they do to promote their child's health and to provide care during illness. This is especially important if the child has a chronic illness or does not seem to respond to traditional care measures. It is essential that the nurse be a resource and a health care partner as the parents make decisions about their child's health care. Well child and sick child care occurs first within the family setting, and then through contact with the formal health care system initiated when there are parental concerns. Only 21% of the parents in this study reported discussing therapies used at home with either their child's physician or nurse.

When evaluating any practice or therapy, both safety and effectiveness should be considered. Parents need to be reminded that very little research has been done to determine the effectiveness of many CAM therapies (Kemper, Cassileth, & Ferris, 1999). In addition, there is always the risk of an adverse effect or an allergic reaction (even to something that is "natural"). There can be interactions between any type of ingested substances including foods, medications and botanicals.

One serious concern about the use of herbs and nutritional/dietary supplements is that there are no mandatory standards for quality and the product may contain only a small percentage of the labeled substance. Contaminants (including heavy metals, drugs, and pesticides) have been found in some botanicals (Ernst, 1998; Glisson, Crawford & Street, 1999). Many plants look alike and toxic plants could be mistaken for common herbs during the preparation (Fugh-Berman, 1997).

Pediatric nurse practitioners should support quality controls such as standardized products and accurate labeling of ingredients. Fortunately, homeopathic medications are regulated by the Food and Drug Administration, which provides guidelines for their labeling and sale (Frye, 1997). All recognized homeopathic products, both prescription and over-the-counter, must be listed in the Homeopathic Pharmacopoeia of the United States (HPUS), which is the official reference guide for homeopathic drugs (see www.hpcus.com). Parents who use homeopathic products should look for the Homeopathic Pharmacopoeia of the United States symbol on the homeopathic remedy packaging.

Families should be cautioned about the use of any ingested product for pregnant women, infants, and breastfeeding mothers because young children are developmentally immature with unique pharmacokinetics. Although there is some evidence that certain chamomile and/or fennel tea may provide benefits to infants with colic (Kemper, 1996; Weizman, Alkrinawi, Goldfarb, & Bitran, 1993), there are many herbs that are harmful when taken by children and adults (Mack, 1998). The ingestion of comfrey is associated with liver disease and the use of pennyroyal is associated with liver problems, central nervous system problems, and shock (Mack, 1998). Ma Huang (ephedra) can adversely affect the heart and central nervous system (Kemper, 1996; Mack, 1998).

This is an exciting time because there are numerous research studies investigating various CAM therapies. Current research projects sponsored by the NCCAM that involve children include the treatment of upper respiratory infections with the botanical echinacea; the use of craniosacral osteopathic manip-

ulation and botanicals in recurrent otitis media; the treatment of functional abdominal pain with guided imagery and chamomile tea; and the use of massage in preterm infants to promote weight gain (NCCAM, 2002).

Many other questions are still unanswered. What is the appropriate role of hypnosis (Sugarman, 1996) or acupuncture (Kemper et al., 2000) for children with chronic health problems? Are any herbs or supplements helpful to children with ADHD (Chan, Gardiner, & Kemper, 2000)? Does massage benefit both healthy and ill children? (Field, Schanberg, Davalos, & Malphurs, 1996; Field et al, 1986; Field et al, 1998). Finally, how do parents and professionals interpret and implement the information on alternative and complementary therapies?

Numerous resources are available on the Web for both health professionals and the public. Some of the sites that provide reliable information include the following:

National Center for Complementary and Alternative Medicine (www.nccam.nih.gov), ConsumerLab.com (www.consumerlab.com), American Botanical Council (www.herbalgram.org), Herb Research Foundation (www.herb.org), Longwood Herbal Task Force (www.mcp.edu/herbal/default.htm), Touch Research Institute (www.miami.edu/touch-research/home.html), and Homeopathic Pharmacopoeia Convention of the United States (www.hpcus.com).

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