

Published in final edited form as:

Acad Pediatr. 2013 ; 13(6): . doi:10.1016/j.acap.2013.05.001.

Use of Complementary and Alternative Medical (CAM) Therapies Among Youth with Mental Health Concerns

Kathi J Kemper, MD, MPH⁽¹⁾, Paula Gardiner, MD, MPH⁽²⁾, and Gurjeet S. Birdee, MD, MPH⁽³⁾

⁽¹⁾Pediatrics; Ohio State University College of Medicine, Columbus, OH

⁽²⁾Department of Family Medicine; Boston University Medical School, Boston, MA

⁽³⁾Departments of Internal Medicine and Pediatrics, Vanderbilt University School of Medicine, Nashville, TN

Abstract

Background—Use of complementary and alternative medical (CAM) therapies is common among adults with mental health concerns, but little is known about CAM use among adolescents with mental health concerns.

Methods—Data from the 2007 National Health Interview Survey were analyzed for youth from 7–17 years old. The study focused on three common mental health conditions: attention deficit hyperactivity disorder (ADHD), anxiety, and depression. CAM use was identified by criteria from the National Institutes of Health National Center for Complementary and Alternative Medicine (NIH NCCAM).

Results—In a sample of 5651 individuals, representing seven million youth, with one or more mental health concerns in the past 12 months, 28.9% used one or more types of CAM excluding vitamins/minerals. In contrast, only 11.6% of those without mental health concerns reported CAM use ($P<0.05$). Among youth with one or more mental health conditions, the most commonly used CAM therapies were mind-body therapies (16.3%) and biologically-based therapies (11%); use was higher for therapies that could be directly accessed (18.6%), than for therapies delivered in groups (11.8%) or through a health professional (10.2%). In the multivariable regression model, demographic factors significantly associated with CAM use were higher household income, higher parental education, having other chronic health conditions, use of prescription medications, and difficulty affording mental health counseling.

Conclusion—Readily accessible CAM therapies are commonly used by youth with ADHD, depression, and anxiety, particularly those who have co-morbid chronic health conditions, take

© 2013 Academic pediatric Association. Published by Elsevier Inc. All rights reserved.

Corresponding author: Gurjeet Birdee, MD, MPH Vanderbilt University Medical Center, Vanderbilt Center for Health Services Research, Internal Medicine and Pediatrics, Suite 6000 Medical Center East, Nashville, TN 37232-8300. Phone (615)-936-0584; Fax: 615-936-1269; gurjeet.birdee@vanderbilt.edu.

Financial Disclosures: Dr. Paula Gardiner is the recipient of Grant Number K07 AT005463-01A1 and Dr. Gurjeet Birdee of Grant Number K23 AT006965-01A1 from the National Center for Complementary & Alternative Medicine. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Center For Complementary & Alternative Medicine or the National Institutes of Health.

Conflicts of Interest: There are no conflicts of interest to report.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

prescription medications, and difficulty affording counseling. Clinicians can use this data to guide inquiries and counseling. Researchers should explore the longitudinal relationship between access to coordinated care within a medical home and use of CAM therapies among youth with mental health concerns.

What's New—Use of CAM is more than twice as common among youth with mental health concerns as those without. Among youth with mental health conditions, use is associated with presence of co-morbidities, prescription medication use, and difficulty affording counseling, perhaps reflecting higher health care utilization and inability to seek conventional care due to cost.

Keywords

adolescents; complementary; health services research; depression; anxiety; ADHD; mood; mental health; youth

BACKGROUND

Mental health concerns such as attention deficit hyperactivity disorder (ADHD), anxiety, and depression are common and increasing among American youth.^{1,2} For example, the prevalence of ADHD increased from 1.95% in 1990 to 5.9% in 1998 to 8.2% in 2007.^{3–5} The 2010 National Comorbidity Survey-Adolescent Supplement, a face-to-face survey using structured diagnostic assessments of over 10,000 13–17 year old American youth reported a 40.3% one year prevalence for DSM-IV disorders in adolescents, with anxiety (24.9%), behavioral (16.3%), and mood (10%) disorders being most common.² Youth diagnosed with chronic mental health problems typically have a high rate of chronic co-morbid mental and physical health conditions which may further complicate their care.⁵

Among adults with mental health concerns, use of complementary and alternative medical (CAM) therapies is common. For example, among adults responding to the National Comorbidity Survey Replication, a representative survey in which diagnoses of mental disorders are based on a structured diagnostic interview, those with mental disorders were significantly more likely than those without to use herbal medicines; they were also more likely to have co-morbid conditions and to use more conventional health care.⁶ The most commonly used CAM therapies in adults are those that individuals can directly access, such as dietary supplements and deep breathing exercises, as compared to CAM therapies which require services by CAM providers (e.g. acupuncture) or teachers (e.g. yoga).^{7,8} In adults, demographic factors associated with CAM use include age (being middle aged), female gender, non-Hispanic Caucasian race, and higher income.

Within pediatrics, adolescents are the most common users of CAM therapies and have the highest prevalence of mental health diagnoses.⁹ In general, teens most commonly use special diets, dietary supplements, and mind-body therapies that can be implemented at low cost without professional assistance.^{10–13} Data on the use of CAM therapies by youth with mental health concerns, particularly on the relationship of CAM use to demographic and health factors and use of conventional care would be useful for clinicians increasingly being asked to care for mental health conditions in primary care.¹⁴ This information would also be useful to researchers seeking to understand the effectiveness of the most widely used CAM therapies in conjunction with conventional medical care for youth with mental health concerns with or without additional comorbid conditions and how access to medical care affects use of CAM.

We conducted this study to answer three primary questions using data from the 2007 National Health Interview Survey data:

1. Among youth 7–17 years old, is CAM use more common for those with than those without one or more of the most common mental health concerns (ADHD, anxiety, and depression)?
2. What demographic, family, and disease factors are associated with CAM use in this population? We hypothesized that those with another chronic health condition/concern would be higher CAM users than those with a single mental health concern.
3. How is CAM use associated with use of conventional medical care? We hypothesized that because they experience greater needs for health care, CAM users would a) use more prescription medications and b) report more barriers to using conventional care than non-CAM users.

METHODS

Data sources

The study uses data from the 2007 National Health Interview Survey (NHIS). In 2007 NHIS sampled 75,764 non-institutionalized individuals and had a 76.5 % response rate, including 9,417 children, representing 73.7 million US children. Data files for the 2007 NHIS regarding children included a Family Core, Sample Child Core, Adult Core, and the following files: Household File; Family file; Person file; Sample Child (CHILD); and Adult and Child Complementary and Alternative Medicine (CAM) Supplements. An adult family member in the same household responded to questions about the child's health include use of CAM. The survey was conducted face-to-face in English and/or Spanish.

The 2007 NHIS Sample Child Core collected data regarding health conditions and use of conventional medicine in the last 12 months. Of specific interest to the present study, adult respondents were asked about the CHILD's mental health: 1. *“Has a doctor or health professional ever told you that [CHILD'S name] had Attention Deficit Hyperactivity Disorder (ADHD) or Attention Deficit Disorder (ADD);* 2. *“During the past 12 months, has [CHILD'S name] had anxiety or stress?”* 3. *During the past 12 months has a doctor or other health professional told you that [CHILD'S Name] had depression?”* Because of high overlap of positive responses to questions about anxiety and depression, these two conditions were combined into one condition for analyses.

Data were also collected on other chronic physical and mental health conditions including cancer, chronic mental, behavioral and developmental conditions (autism, phobia or fears, mental retardation, developmental delay, Down Syndrome, and learning disability), dermatologic conditions (severe acne, eczema or skin allergy), gastrointestinal conditions, (acid reflux or heartburn, frequent/repeated diarrhea or colitis, recurring constipation), gum disease, hearing problems, heart conditions (congenital heart disease, heart problems), menstrual problems, neurologic problems (muscular dystrophy, seizure, other neurological problems, headaches), overweight, and pulmonary conditions (asthma, respiratory allergies, lung or breathing problems other than asthma).

The Child CAM Supplement asked adult respondents about their children's use of the following CAM modalities in the last 12 months: acupuncture, Ayurveda, biofeedback, chelation therapy, chiropractic or osteopathic manipulation, deep breathing exercises, energy healing therapy, herbs and other non-vitamin/mineral dietary supplements, hypnosis, massage, naturopathy, movement techniques (e.g., Alexander technique, Feldenkrais, and Pilates), guided imagery, homeopathy, meditation, progressive relaxation, support group meetings, and/or stress management class), traditional healers (e.g., Botanica, Curandero, or Shaman) qi gong, special diets (e.g., Atkins, Macrobiotic, Ornish, Pritikin, South Beach,

Vegetarian, or Zone), Tai Chi, and yoga. The Child CAM Supplement excludes prayer for health purposes and some home remedies such as ice, heat, music, bright lights, sound machines, magnets, and hydrotherapy.

For analytic purposes, we first combined all individual CAM modalities into an overarching category of ANY CAM use in the previous 12 months, excluding vitamins and minerals because vitamins and minerals are commonly used among children and adults. Then, we used the five CAM categories defined by the National Center for Complementary and Alternative Medicine (NCCAM)⁷: mind-body practices (biofeedback, deep breathing exercises, hypnosis, guided imagery, meditation, progressive relaxation, qi gong, support groups, stress management classes, tai chi, and yoga); biologically based (diets, dietary supplements); manipulative/movement based practices (chiropractic/osteopathic, massage, and movement therapies); whole medical systems and traditional healers (homeopathy, naturopathy, ayurveda, Curandero, Espiritista, Hierbero, Yerbera, Shaman, Botanica, Native American Healer/Medicine man, Sobador); and energy medicine. Finally, we used a simple CAM trichotomy based on our clinical experience: a) therapies patients typically access directly (e.g., special diets, supplements, deep breathing exercises); b) therapies or practices typically provided in groups or classes (e.g., stress management classes, support groups, tai chi, yoga); and c) therapies typically requiring professional assistance (e.g., hypnosis, guided imagery, acupuncture, chiropractic/osteopathy, massage, movement therapies, naturopathy, traditional healers, and energy medicine). Group or sub-groups with less than 30 responses were excluded from analyses.

The Family Core collected data on sociodemographics and insurance status. Categories were collapsed based on our clinical experience and earlier NHIS analyses to ensure adequate sub-group sizes for analysis. The factors we included were age (7–9, 10–13, 14–17 years); gender; race (non-Hispanic white vs. Hispanic, Black or other); annual household income (< \$35,000 vs. \$35,000 or more); highest education of either parent (high school graduate or less, some college, and Bachelor's Degree or more); geographic region (South vs. other); and health insurance (private, non-private, uninsured, and unknown).¹⁵

The Sample Child Core also obtained data on prescription medication use and difficulty affording prescription medications and mental health counseling. Specifically: 1.) “Does [CHILD’S name] now have a problem for which she/he has regularly taken prescription medication for at least three months?”; 2.) “During the past 12 months, was there any time when [CHILD’S name] needed any of the following, but didn’t get it because you couldn’t afford it? prescription medications (Yes, No) and Mental health care or counseling (Yes, No). We collapsed data regarding delayed medical care due to access difficulties (*difficulty getting through on phone, ... couldn’t get an appointment soon enough, ... wait too long to see doctor, ... wasn’t open when you could get there, ... didn’t have transportation*) into a single dichotomous category to identify possible correlates with CAM use (delay vs no delay in medical access).

Data analysis

We used Chi-squared tests of independence to compare CAM use among youth without and with mental health conditions (ADHD, anxiety, and depression) and co-morbid mental health and other chronic medical conditions. We did not perform analyses of specific mental health conditions or CAM modalities due limitations in the sample size. We compared differences in sociodemographics, use of conventional medicine, and barriers to conventional medical care. We utilized bivariable and multivariable logistic regression analysis to identify independent factors associated with CAM use among youth with mental health conditions. For regression analyses, mental health conditions were combined into a single category. Variables considered in the multivariable model were based on a P value of

0.20. The multivariable model was built with a backward elimination strategy retaining factors with a P value of .05. We used SAS-callable SUDAAN 9.1 (Research Triangle Institute, Research Triangle Park, NC) to obtain appropriate weighted national estimates for youth between 7–17 years in the U.S. population in 2007.

RESULTS

In the 2007 NHIS, 15.9% (estimated 7,182,127) of youth between 7–17 years old were estimated to have ADHD (8.9%), anxiety (9.5%), and/or depression (3.7%) in the past 12 months. There was significant overlap among these self-reported mental conditions. For mood disorders, 6.7% reported anxiety only, 0.8% reported depression only, and 2.8% reported co-morbid anxiety and depression. The self-reported prevalence of having only ADHD was 5.6% versus having co-morbid ADHD with a mood disorder (depression or anxiety) was 3.2%.

Of those with one or more of these mental health concerns, 28.9%, representing 2 million US youth, used one or more types of CAM in the past 12 months, excluding prayer, vitamins and minerals. This rate was substantially higher than the percentage using CAM among those without a mental health condition (11.6%, $P < 0.05$) (Table 1). CAM use was higher for those with depression/anxiety (34.8%) than for those with ADHD (24.7%, $P < 0.05$). Children with anxiety alone versus co-morbid anxiety and depression had similar rates of CAM use (35%). The sample of children who reported depression only was too small to report prevalence of CAM use. CAM use was higher among children with co-morbid ADHD and mood disorder (36.2%) as compared to having ADHD alone (17.3%).

For those with mental health conditions, the most commonly used CAM therapies were mind-body practices (16.3%) and biological therapies (11%), followed by manipulative and body-based therapies (8.5%). Alternative medical systems and energy healing modalities were used by fewer than 3%. Overall, the types of CAM most often used were those typically accessed directly (18.6%), rather than those requiring classes (11.8%) or professional assistance (10.2%).

CAM use was associated with older age, being female, Non-Hispanic Caucasian, from a geographic region other than the Southern US, higher household income, higher parental education, and having private insurance versus public or no insurance (Table 2). The group with the highest rate of CAM was youth with anxiety/depression whose parents had more than a high school education (43%) whereas the lowest use was for those with ADHD with an annual household income $< \$35,000$ (18.3%).

Further, youth with a mental health condition in addition to chronic conditions were more likely to use CAM users (31.9% vs. 16.6%, $P < 0.05$) (Table 3). Significant differences were seen in CAM use for specific chronic conditions including asthma, headache, eczema/skin allergy, and respiratory allergy. Prescription medication users with mental health concerns as compared to without were also more likely to use to CAM (35.0% versus 15.9%, $P < .05$) Children with mental health concerns whose families reported difficulty affording mental health counseling had a very high rate of CAM use (47.3%).

CAM use was not statistically different by mental health concern for those experiencing barriers accessing conventional care. In the multivariable regression model (Table 4), controlling for age and gender, factors that remained statistically significantly associated with CAM use were presence of other chronic health condition (OR 2.19 [1.21, 3.97]), prescription medication use (OR 1.80 [1.18–2.74 – 3.24]), difficulty affording mental health counseling (OR 2.63 [1.35–5.11]), and higher parental education (OR Bachelor degree or higher versus high school or less 3.04 [1.76 – 5.26]).

DISCUSSION

Significant findings

Use of CAM is more than twice as common among youth with mental health concerns as those without (28.9% vs. 11.6%, $P < 0.05$). CAM use is twice as high among youth with comorbid chronic health conditions and those who used prescription medications, perhaps reflecting higher health care utilization. Difficulty affording mental health counseling was associated with higher CAM use, suggesting that lack of financial resources may drive for CAM use for mental health treatment. As with adults, the most commonly used CAM therapies among youth with mental health concerns are those directly accessed such as mind-body and biologically based therapies compared with those requiring classes or professional intervention.¹² Unexpectedly, barriers to accessing conventional care were not significantly greater among those using CAM as among non-CAM users. Consistent with another pediatric study, CAM use was higher among those whose families had higher income and education.⁹

As a cross-sectional study it is not possible to determine conclusively why mental health conditions are associated with increased CAM use. The adult literature may provide some insight. Among adult patients with depression, survey studies have found that patients choose CAM therapies because of CAM's "natural approach", CAM treatments are congruent with their own beliefs, prior experience with conventional medicine had unpleasant side effects or were ineffective, and the desire to avoid consulting health practitioners.^{16,17} Another study reported that among adults with neuropsychiatric symptoms, 25% of patients reported using CAM because either standard treatments were too expensive or ineffective, and 25% also reported using CAM because a conventional provider suggested it.¹⁸

Clinically, these data raise several concerns. First, given their easy access, parents as well as clinicians may not be aware that youth are using CAM therapies unless the child is specifically asked. These findings support earlier recommendations that pediatricians routinely ask about youth's use of CAM.⁹ Also, if CAM use is reported, even if the patient is already receiving care from multiple clinicians, it may be worthwhile to probe about unmet needs. Third, the higher rate of CAM use among those with chronic health conditions taking prescription medications raises the potential for medication and biologically-based supplement (e.g. herb) interactions, compounding or nullifying effects, or misattribution of effects.

These findings also raise research questions. First, since CAM therapies are commonly used along with prescription medications, research suggests that increasing the number of interventions may adversely affect adherence, and/or adherence to conventional treatment recommendations.¹⁹⁻²¹ On the other hand, if families use CAM to mitigate side effects of conventional care, having fewer side effects may improve adherence to prescription medications. Another question is whether families turn to CAM instead of seeking professional mental/behavioral counseling due to financial barriers and/or other factors. If patients are seeking CAM because mental health counseling is not affordable, the efficacy, safety and cost of CAM use must be studied as an alternative to conventional care. The high rates of CAM use among youth whose parents have higher education suggests that to the extent CAM use is beneficial; there may be disparities in access to these therapies as well. This warrants further examination in the context of access to comprehensive care. Finally, it would be useful to understand how having a medical home in which mental health and wellness services are collocated with primary care affects CAM use.¹⁴

Limitations

For this survey, adolescents did not respond directly about their own use, and there may be inconsistencies between adult and youth report of CAM use.²² In addition, these survey data are prone to recall bias. The presence of a mental health condition(s) was based on self-report rather than standard clinical definitions or testing. We categorized ADHD, depression, and anxiety into a single category for mental health concerns. However, anxiety may be a symptom whereas ADHD or depression may be clinical diagnoses, and therefore the equivalence of these mental concerns may not be valid. The survey may not have captured children with undiagnosed or unrecognized mental health concerns. The survey did not ask about disease severity, so in addition to demographic factors and comorbid conditions, CAM use might be influenced by disease severity, or local variations in accessibility. This study did not include all types of care that some might consider complementary care, such as prayer. The study did not address questions about cost or effectiveness of CAM therapies used alone or integrated into conventional care. Data on health insurance was unknown for a large number of subjects, so this variable and related analyses may be unreliable. The survey was cross-sectional and cannot answer questions about causality. The study was done in English and Spanish speaking patients and excludes those who speak other languages who may have different patterns of CAM use.

CONCLUSIONS

Youth with mental health conditions, particularly those with comorbid conditions or taking prescription medications frequently use CAM. CAM is usually directly accessed (deep breathing and biological therapies) rather than sought through groups or individual CAM providers. Clinicians should routinely ask youth with mental health conditions about their use of CAM. Future research should explore the effectiveness of these therapies. In particular, further inquiry is necessary to determine if CAM use is sufficiently augmenting conventional care (e.g. prescription medications) or meeting the needs of patients who have limited access (e.g. difficulty affording mental health counseling).

References

1. Foy JM. Enhancing pediatric mental health care: report from the American Academy of Pediatrics Task Force on Mental Health. *Introduction Pediatrics*. 2010; 125 (Suppl 3):S69–74.
2. Kessler RC, Avenevoli S, Costello EJ, et al. Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication Adolescent Supplement. *Arch Gen Psychiatry*. 2012; 69:372–80. [PubMed: 22147808]
3. Robison LM, Skaer TL, Sclar DA, Galin RS. Is attention deficit hyperactivity disorder increasing among girls in the US? Trends in diagnosis and the prescribing of stimulants. *CNS Drugs*. 2002; 16:129–37. [PubMed: 11825103]
4. Boyle CA, Boulet S, Schieve LA, et al. Trends in the prevalence of developmental disabilities in US children, 1997–2008. *Pediatrics*. 2011; 127:1034–42. [PubMed: 21606152]
5. Larson K, Russ SA, Kahn RS, Halfon N. Patterns of comorbidity, functioning, and service use for US children with ADHD, 2007. *Pediatrics*. 2011; 127:462–70. [PubMed: 21300675]
6. Ravven SE, Zimmerman MB, Schultz SK, Wallace RB. 12-month herbal medicine use for mental health from the national Comorbidity Survey Replication (NCS-R). *Ann Clin Psychiatry*. 2011; 23:83–94. [PubMed: 21547268]
7. Barnes PM, Bloom B, Nahin RL. Complementary and alternative medicine use among adults and children: United States, 2007. *Natl Health Stat Report*. 2008;1–23. [PubMed: 19361005]
8. Tindle HA, Davis RB, Phillips RS, Eisenberg DM. Trends in use of complementary and alternative medicine by US adults: 1997–2002. *Altern Ther Health Med*. 2005; 11:42–9. [PubMed: 15712765]
9. Kemper KJ, Vohra S, Walls R. American Academy of Pediatrics . The use of complementary and alternative medicine in pediatrics. *Pediatrics*. 2008; 122:1374–86. [PubMed: 19047261]

10. Breuner CC, Barry PJ, Kemper KJ. Alternative medicine use by homeless youth. *Arch Pediatr Adolesc Med.* 1998; 152:1071–5. [PubMed: 9811283]
11. Shakeel M, Little SA, Bruce J, Ah-See KW. Use of complementary and alternative medicine in pediatric otolaryngology patients attending a tertiary hospital in the UK. *Int J Pediatr Otorhinolaryngol.* 2007; 71:1725–30. [PubMed: 17714796]
12. Gardiner P, Kemper KJ, Legedza A, Phillips RS. Factors associated with herb and dietary supplement use by young adults in the United States. *BMC Complement Altern Med.* 2007; 7:39. [PubMed: 18053129]
13. Cotton S, Luberto CM, Yi MS, Tsevat J. Complementary and alternative medicine behaviors and beliefs in urban adolescents with asthma. *J Asthma.* 2011; 48:531–8. [PubMed: 21504264]
14. Foy JM. Enhancing pediatric mental health care: algorithms for primary care. *Pediatrics.* 2010; 125 (Suppl 3):S109–25. [PubMed: 20519563]
15. Birdee GS, Phillips RS, Davis RB, Gardiner P. Factors associated with pediatric use of complementary and alternative medicine. *Pediatrics.* 2010; 125:249–56. [PubMed: 20100769]
16. Badger F, Nolan P. Use of self-chosen therapies by depressed people in primary care. *J Clin Nurs.* 2007; 16:1343–52. [PubMed: 17584353]
17. Wu P, Fuller C, Liu X, et al. Use of complementary and alternative medicine among women with depression: results of a national survey. *Psychiatr Serv.* 2007; 58:349–56. [PubMed: 17325108]
18. Purohit MP, Wells RE, Zafonte RD, Davis RB, Phillips RS. Neuropsychiatric symptoms and the use of complementary and alternative medicine. *PM R.* 2013; 5:24–31. [PubMed: 23098832]
19. Murray MD, Kroenke K. Polypharmacy and medication adherence: small steps on a long road. *J Gen Intern Med.* 2001; 16:137–9. [PubMed: 11251767]
20. Gardiner P, Dvorkin L. Promoting medication adherence in children. *Am Fam Physician.* 2006; 74:793–8. [PubMed: 16970023]
21. Cherniack EP. Complementary medicine use is not associated with non-adherence to conventional medication in the elderly: a retrospective study. *Complement Ther Clin Pract.* 2011; 17:206–8. [PubMed: 21982134]
22. Gardiner P, Buettner C, Davis RB, Phillips RS, Kemper KJ. Factors and common conditions associated with adolescent dietary supplement use: an analysis of the National Health and Nutrition Examination Survey (NHANES). *BMC Complement Altern Med.* 2008; 8:9. [PubMed: 18377653]

Table 1
Prevalence (%) of CAM use among youth age 7–17 without and with common mental health conditions

CAM modality	No mental health condition N=4728 (84.1%)	ADHD/ADD N= 483 (8.9%)	Anxiety or depression N=543 (10.3%)	ANY Mental health condition N=859 (15.9%)
Any CAM Use	11.6	24.7	34.8	28.9
•Biologically-based therapies	4.4	9.3	12.8	11.0
•Mind-body practices	4.0	15.0	20.5	16.3
•Manipulation and body- based practices	5.5	6.6	9.8	8.5
CAM access				
•CAM directly accessed	6.0	16.4	22.6	18.6
•CAM delivered through group	3.0	11.4	14.6	11.8
•CAM delivered through professional	4.9	6.7	12.7	10.2

NOTE: Fewer than 3% of youth used alternative medical systems or energy medicine

Abbreviations: ADHD, attention-deficit hyperactivity disorder; ADD, attention deficit disorder

Table 2

CAM use by demographic among youth 7–17 years old with any mental health condition, ADHD, or anxiety/depression (%)

Demographic	All subjects N=5651	None N=4783 (84.1%)	ADHD N=483 (8.9%)	Anxiety/Depression N=498 (10.3%)	Any Mental Health Condition N=868 (15.9%)	P Value ¹
Age (years)						
7–9	13.0	11.2	2	31.7	22.9	P < .05
10–13	13.7	10.7	27.0	32.9	29.1	
14–17	19.2	16.2	27.7	37.5	31.6	
Gender						
Female	16.5	13.8	28.7	35.6	33.8	P = .09
Male	14.7	11.9	23.1	34.1	25.5	
Ethnicity/Race						
Non-Hispanic	18.6	15.5	27.2	37.6	31.7	P < .05
Caucasian						
Black, Hispanic or Other	10.7	9.2	19.1	27.5	22.2	
Region						
South	12.7	10.1	17.0	31.0	22.7	P < .05
Non-south	17.2	14.4	31.1	36.8	33.1	
Parental Education						
Bachelor's Degree or higher	22.5	19.3	36.1	48.1	41.3	P < .05
Some College	13.6	10.3	21.5	36.5	28.4	
HS or less	10.4	8.6	20.5	19.9	18.9	
Insurance status						
Private	18.1	15.4	26.4	39.1	32.6	P < .05
Non-private	11.0	7.8	20.7	26.3	21.6	
Uninsured	12.5	10.3	2	2	2	
Unknown	15.9	12.8	28.5	39.0	31.9	

¹ P values based on chi-squared test for youth with no health condition versus any mental health condition

² Number too small to report

Table 3

Differences in CAM use by mental health concern and co-morbid chronic condition(s), use of prescription medications, and barriers to medical care in the last 12 months

Other factors	CAM use/Mental Health Concern		P value ¹
	Yes	No	
Other chronic conditions (% yes)			
Asthma	31.9	16.6	<0.05
Headache	28.6	13.3	<0.05
Eczema/skin allergy	30.2	21.1	<0.05
Respiratory allergy	39.7	18.0	<0.05
Prescription medications (% yes)	28.6	19.2	<0.05
Difficulty affording prescription medications	35.0	15.9	<0.05
Difficulty affording mental health counseling	43.5	27.8	0.29
Barriers to care (% yes)	47.3	11.2	<0.05
	32.3	18.8	<0.05

¹ P values based on chi-squared test.

Table 4

Multivariable regression model for factors associated with CAM use among children with any reported mental health condition

Characteristic	Adjusted Odds Ratio ¹
Age (years)	Reference
7–9	1.49 [0.73–3.03]
10–13	1.52 [0.77–2.97]
Gender	1.43 [0.93–2.22]
Female	Reference
Male	Reference
Parental Education	
Bachelor degree or more	3.04 [1.76–5.26]*
Some college	1.45 [0.87–2.42]
High school or less	Reference
Other chronic conditions²	
Yes	2.19 [1.21–3.97]
No	Reference
Prescription medication	
Yes	1.80 [1.18–2.74]
No	Reference
Difficulty afford mental health counseling	
Yes	2.63 [1.35–5.11]
No	Reference

¹Odds ratios adjusted for age, gender, parental education, other chronic conditions, prescription medication use, and difficulty affording mental health counseling

²Chronic conditions consist of other health conditions including cancer, Down Syndrome, learning disabilities, severe acne, eczema or skin allergy, gastrointestinal conditions, acid reflux or heartburn, frequent/repeated diarrhea or colitis, recurring constipation, gum disease, hearing problems, congenital heart disease or other heart problems, menstrual problems, muscular dystrophy, seizure or other neurological problems, headaches, being overweight, asthma, respiratory allergies, lung or breathing problems other than asthma

* Bold indicates statistically significant result.