Published in final edited form as:

J Natl Med Assoc. 2008 November ; 100(11): 1341–1349.

Disclosure of Complementary and Alternative Medicine to Conventional Medical Providers: Variation by Race/Ethnicity and Type of CAM

Maria T. Chao, DrPH, MPA, Christine Wade, MPH, and Fredi Kronenberg, PhD

Richard and Hinda Rosenthal Center for Complementary and Alternative Medicine, College of Physicians and Surgeons, Columbia University, New York, NY.

Abstract

Background—Complementary and alternative medicine (CAM) is often used alongside conventional medical care, yet fewer than half of patients disclose CAM use to medical doctors. CAM disclosure is particularly low among racial/ethnic minorities, but reasons for differences, such as type of CAM used or quality of conventional healthcare, have not been explored.

Objective—We tested the hypotheses that disclosure of CAM use to medical doctors is higher for provider-based CAM and among non-Hispanic whites, and that access to and quality of conventional medical care account for racial/ethnic differences in CAM disclosure.

Methods—Bivariate and multiple variable analyses of the 2002 National Health Interview Survey and 2001 Health Care Quality Survey were performed.

Results—Disclosure of CAM use to medical providers was higher for provider-based than self-care CAM. Disclosure of any CAM was associated with access to and quality of conventional care and higher among non-Latino whites relative to minorities. Having a regular doctor and quality patient–provider relationship mitigated racial/ethnic differences in CAM disclosure.

Conclusion—Insufficient disclosure of CAM use to conventional providers, particularly for self-care practices and among minority populations, represents a serious challenge in medical encounter communications. Efforts to improve disclosure of CAM use should be aimed at improving consistency of care and patient–physician communication across racial/ethnic groups.

Keywords

complementary and alternative medicine; race/ethnicity; communication; access; quality of care

INTRODUCTION

More than two-thirds of the U.S. population has used complementary and alternative medicine (CAM), defined as healthcare systems, practices and products not currently considered part of conventional medicine.^{1,2} Most Americans use CAM as an adjunct to, rather than a substitute for, conventional medical care.^{3,4} Yet, 63–72% of CAM users do not discuss use with doctors;⁵ and CAM disclosure is particularly low among racial/ethnic minorities.^{6–10} CAM utilization

can affect treatment outcomes, including adverse herb–drug interactions,^{11,12} underscoring the need for patient–provider communication about CAM.^{13,14}

Reasons patients give for nondisclosure of CAM use include doctors not asking about CAM use, beliefs that doctors do not need to know or would not understand, and doctors' potentially negative responses to CAM.^{5,15–17} Perceived legitimacy of CAM treatments also affects disclosure. In a qualitative study of self-treatment practices originating from popular, folk and professional sectors, Stevenson et al. found that patients most likely discussed treatments from the professional sector with physicians because they were perceived as legitimate and medically acceptable.¹⁸ Research suggests disclosure differs by type of CAM used,¹⁵ but a systematic examination of disclosure rates for specific CAM modalities, provider based and self-care, has not been conducted. Patients may more willingly disclose use of provider-based CAM (e.g., chiropractic or acupuncture) relative to self-care CAM (e.g., vitamins and herbal medicine) if the former is perceived as more legitimate.

CAM disclosure also varies by subpopulation. African Americans, Latinos and Asian Americans are less likely than non-Latino whites to tell doctors about using CAM,^{6–9} but reasons for differences are not understood. Minorities face multiple barriers to receiving adequate healthcare—including cost, communication, insurance and suboptimal sources of care (e.g., hospital emergency room)^{19,20}—which may result in medical encounters that do not facilitate disclosure of CAM use. One study found that Asian Americans who discussed CAM use with a health provider rated their quality of health-care higher than those that did not discuss CAM use.¹⁰ Healthcare factors that may limit opportunity to disclose CAM use include number and length of medical encounters, continuity of care and medical charting conventions. A remaining question is whether disparities in access to quality conventional care contribute to racial/ethnic differences in CAM disclosure.

We addressed the following research questions: 1) Does disclosure of CAM use to conventional medical providers differ by type of CAM and race/ethnicity? 2) Are access to and quality of conventional care associated with CAM disclosure? 3) Are racial/ethnic differences in CAM disclosure mitigated by access to and quality of conventional healthcare received? We hypothesized that disclosure is higher for provider-based CAM because professional care is perceived to have greater legitimacy; and that CAM disclosure is lower among racial/ethnic minorities relative to non-Latino whites, but that access to and quality of conventional care account for racial/ethnic differences in CAM disclosure.

METHODS

Data Sources

We utilized national data from the 2002 National Health Interview Survey (NHIS) and the Commonwealth Fund's 2001 Health Care Quality Survey (HCQS). Both surveys employ a complex multistage design to oversample minority populations and, with appropriate weighting, are representative of adults age ≥ 18 in the continental United States. Detailed survey methodology has been previously reported.^{6,21} The 2002 NHIS includes disclosure of specific CAM domains but limited measures of quality of conventional care. The HCQS includes detailed information on quality of conventional care and a general measure of CAM disclosure. For this study, each data set was analyzed separately.

MEASURES

Dependent Variables

In 2002, NHIS included a supplement on CAM implemented as part of the Sample Adult Core. Respondents were asked if, in the past 12 months, they employed any of 10 provider-based

domains (acupuncture, ayurveda, biofeedback, chelation therapy, chiropractic care, energy healing therapy, folk medicine, hypnosis, massage and naturopathy) and 6 domains that may be self-care or provider-based (natural herbs, homeopathic treatment, special diets, high-dose or megavitamin therapy, yoga/tai chi/qi gong and relaxation techniques). Of the domains that could be self-care or provider based, only 8% of users saw a provider for those domains when yoga/tai chi/qi gong classes were excluded. These domains generally involve self-care maintenance beyond treatment from a provider (e.g., regularly taking herbs or adhering to a specific diet). Thus, we refer to these therapies as “self-care CAM.” Respondents who had used a CAM domain were asked, “During the past 12 months, did you let any of these *conventional* medical professionals know about your use of [CAM domain]?” We coded disclosure of CAM use dichotomously (disclosure versus no disclosure) for each domain and created 3 summary measures: 1) disclosure of ≥ 1 of 16 CAM domains, 2) disclosure of ≥ 1 of 10 provider-based CAM domains, and 3) disclosure of ≥ 1 of 6 self-care CAM domains.

In the HCQS, respondents who used ≥ 1 alternative therapy were asked, “Have you told your doctor that you use [herbal medicines, acupuncture, a chiropractor, a traditional healer]?” A dichotomous variable was created to indicate any disclosure versus no disclosure.

Independent Variables

Race/ethnicity was classified by: 1) whether respondents were of Latino or Hispanic origin or descent and; 2) what race they considered themselves. In each data set, we created 4 dichotomous variables: non-Latino white, non-Latino African American, Latino regardless of race and non-Latino Asian American. Due to small sample sizes and uncertain heterogeneity, those who responded as other, American Indian, “don’t know” or refused the race inquiry and were not Latino were excluded from study analyses.

Access to and quality of conventional care were examined through 5 NHIS measures. Health insurance status was measured in 3 dichotomous variables: no insurance, public insurance, private insurance. Three additional dichotomous measures of access to conventional care included whether respondents: 1) had postponed medical care in the past year due to cost; 2) experienced any changes in their place of care; and 3) experienced delays in getting medical care (such as transportation difficulties, getting an appointment and waiting time prior to seeing the doctor). A proxy measure of quality of care was created from 2 questions: 1) “Is there a particular clinic, health center, doctor's office or other place that you usually go to if you are sick or need advice about your health?” and 2) if so, where their usual place of healthcare was. A usual source of conventional care variable was created with higher scores estimating greater quality of care (1 = no usual place, 2 = hospital emergency room, 3 = hospital outpatient department, 4 = clinic or health center, 5 = doctor's office or HMO). Previous health services research has used similar measures.²²

Seven measures of access to and quality of conventional care were created from the HCQS. Health insurance status, postponing care due to cost and usual source of care were coded in the same way as data from NHIS. Additionally, a dichotomous variable indicated whether respondents had a regular doctor or other health professional, such as a nurse or a midwife that they usually go to when sick or in need of health care (yes/no). A fifth measure was based on respondents’ satisfaction with the quality of healthcare they received during the previous 2 years (very satisfied, somewhat satisfied, somewhat dissatisfied or very dissatisfied) coded with higher values indicating greater satisfaction. Another question documented whether respondents or any family member had been given the wrong medication or dose when filling a prescription at a pharmacy or while hospitalized (yes/no).

HCQS included 11 items regarding participant perceptions of patient–provider communication and provider cultural competency used to create a scale for patient–provider relationship. Based

on a factor analysis, 2 items with low interitem reliability were excluded. Nine remaining items included: 1) if the doctor listened to everything the respondent had to say; 2) if the respondent understood everything the doctor said; 3) whether the respondent had questions about care or treatment that they wanted to discuss; 4) level of confidence and trust in the doctor; 5) if the doctor treated the respondent with respect and dignity; 6) if the doctor involved the respondent in decisions about their care as much as the respondent wanted; 7) if the doctor spent as much time with the respondent as respondent wanted; and 8) whether the respondent felt judged unfairly or treated with disrespect by the doctor or medical staff because of: ability to pay, insurance coverage, English proficiency, race/ethnicity, or gender; and 9) how strongly respondent agreed with the statement “I feel that my doctor understands my background and values.” These measures are consistent with recommendations from the Agency for Healthcare Research and Quality in the National Healthcare Disparities Report.²³ Items were coded with higher scores indicating a more favorable relationship; then, mean scores were calculated based on valid responses. Respondents with <5 valid responses were coded as missing. The patient-provider relationship scale had high reliability ($\alpha=0.83$).

Factors assessed as confounders included: age; marital status; region of residence; self-reported health status; number of health conditions; household income; education; current employment status; and, in the HCQS, length of time in the United States.

Statistical Analyses

Data preparation, descriptive analyses, prevalence estimates, and regression analyses were conducted using Stata® Version 9.0.²⁴ Due to oversampling minority populations, both data sets require adjustment for complex multistage sampling procedures, including probability sampling units, weights and strata. All analyses utilized Stata survey estimation techniques, which account for design effects when calculating standard errors.

Chi-squared tests were used to examine disclosure by CAM type and race/ethnicity in the NHIS. Chi-square for categorical variables and Ftests for continuous variables were performed to assess bivariate associations between access to and quality of conventional medical care measures, race/ethnicity and CAM disclosure in the NHIS and HCQS. In each data set, 2 multiple variable logistic regression models were run to test the mediating effects of access to and quality of conventional care: model 1 included race/ethnicity controlling for confounding variables; model 2 replicated model 1 with the addition of access to and quality of care measures. Changes in the adjusted odds ratios for race/ethnicity between the 2 models were compared.

RESULTS

To assess race/ethnicity and CAM disclosure to conventional medical providers, this study was restricted to non-Latino whites, African Americans, Latinos and Asian Americans who had used ≥ 1 CAM domain (10,759 respondents in the NHIS and 2003 respondents in the HCQS). Sample sociodemographics are previously reported.^{8,25}

CAM Disclosure by Type of CAM and Race/Ethnicity

Table 1A shows disclosure of any CAM (39%), provider-based CAM (47%), self-care CAM (34%) and specific CAM domains. For 5 of 10 provider-based CAM, at least half of users disclosed use to medical providers. Though based on small samples, disclosure of biofeedback and chelation therapy was particularly high, at 72% and 75%, respectively. For energy therapies, folk medicine, and massage, one-third or less of users disclosed these therapies (31%, 33% and 31%, respectively). Among self-care domains, disclosure of megavitamins was the

highest (48%). One-quarter or fewer of those who had used yoga, tai, chi, qi gong or relaxation therapies told their medical providers about their use (Table 1A).

We examined disclosure of any CAM, provider-based and self-care CAM by race/ethnicity (Table 1B). Disclosure of any CAM use was lowest among Asian Americans (27%) and highest among non-Latino whites (41%). Relative to non-Latino whites, African-Americans, Latinos and Asian Americans were significantly less likely to disclose any CAM [odds ratio (OR)=0.75, 0.65, 0.52, respectively] or self-care CAM (OR=0.75, 0.62, 0.45, respectively). Compared to non-Latino whites, African Americans were more likely to discuss using provider-based CAM (OR=1.39). Latinos, Asian Americans and non-Latino whites did not differ in provider-based CAM disclosure.

Access to and Quality of Conventional Care, Race/Ethnicity and CAM Disclosure

Access to and quality of conventional care were examined among CAM users by race/ethnicity and by any CAM disclosure (Table 2). NHIS data indicate that, relative to CAM users of other race/ethnicities, Latino CAM users had the highest rate of uninsured (31%, $p<0.001$). African-American and Latino CAM users (25% and 23%, respectively) were more likely to postpone medical care due to cost, compared to non-Latino white or Asian-American CAM users (17% and 11%, respectively). No racial/ethnic differences in delaying medical care due to transportation difficulties, getting an appointment or waiting time were observed. Among CAM users, Latinos (22%) and Asian Americans (17%) were more likely not to have a usual source of medical care compared to non-Latino whites ($p<0.001$).

Disclosure of any CAM use was associated with some aspects of access to and quality of conventional medical care in the NHIS. Respondents with no usual source of care were the least likely to disclose CAM use (17%), while those whose usual source of care was a doctor's office or HMO were most likely to disclose (43%, $p<0.001$). The uninsured were least likely to disclose (25%), compared to privately and publicly insured individuals (41% and 48%, respectively, $p<0.001$).

In the HCQS, disclosure of any CAM use was significantly associated with having private health insurance (73% vs. 50% for no insurance, $p<0.001$), having a regular doctor (75% vs. 49%, $p<0.001$), quality usual source of conventional care (74% for doctor's office vs. 38% for no usual source of care, $p<0.001$), higher satisfaction with conventional care (3.28 vs. 2.87, $p<0.001$) and higher scores on the patient-provider relationship scale (2.15 vs. 1.77, $p<0.001$).

Multiple Variable Logistic Regression Analyses of Any CAM Disclosure

We examined potential confounding effects of age, marital status, region of residence, self-reported health status, number of health conditions, education, income, employment and sex. Variables not associated with CAM disclosure in bivariate analyses were excluded from subsequent analyses (i.e., education and household income in NHIS, self-reported health status and sex in HCQS). In multiple variable logistic regression analyses, we included measures of access to and quality of conventional care that were significantly associated with both race/ethnicity and any CAM disclosure.

Model 1 of Table 3 presents adjusted odds ratios (AORs) of confounding variables and race/ethnicity on CAM disclosure based on 2002 NHIS data. Controlling for sociodemographics and health status, African Americans, Latinos and Asian Americans were significantly less likely to disclose any CAM use to medical providers compared to non-Latino whites (AOR=0.80, 0.67 and 0.57, respectively). Disclosure was also associated with being married, living in the northeast, having worse health and being female.

Model 2 of Table 3 reports odds of CAM disclosure when access to and quality of care are considered. In contrast to bivariate findings, health insurance was no longer associated with CAM disclosure. Those who changed their place of care (AOR=1.20) or had a higher quality of usual source of conventional care (AOR=1.16) were more likely to disclose CAM use when sociodemographics, health status and insurance were controlled. Access to and quality of conventional care did not, however, eliminate racial/ethnic differences in CAM disclosure—compared to non-Latino whites, disclosure remained significantly lower for African Americans, Latinos and Asian Americans (AORs=0.77, 0.74 and 0.56, respectively).

Similar analyses using the 2001 HCQS, which had additional measures of quality of care, are shown in Table 4. Model 1 indicates racial/ethnic differences when sociodemographic and health factors are controlled. African Americans and Latinos were less likely to disclose CAM use (AORs=0.62 and 0.57), compared to non-Latino whites. In Model 2, accounting for sociodemographics and health conditions, having a regular doctor and higher scores on the patient–provider relationship scale were significantly associated with CAM disclosure (AORs=1.90 and 1.37). In contrast to bivariate results, insurance, usual source of care and satisfaction with conventional care were not associated with CAM disclosure. Race/ethnicity was no longer associated with CAM disclosure when access to and quality of conventional care were controlled.

DISCUSSION

Prior research estimates that two-thirds of CAM users do not disclose CAM practices to conventional healthcare providers.^{5,15} Disclosure in this study, although sometimes higher than previously reported, was often <50% for many CAM practices. Findings confirmed our hypothesis of higher disclosure for provider-based than for self-care CAM. Patients may have an easier time discussing provider-based CAM treatments because of a perception that they are more legitimate and acceptable to a conventional medical provider.¹⁸ Domains with >50% disclosure have licensing requirements (e.g., acupuncture and chiropractic) or greater perceived integration with conventional medicine (e.g., biofeedback, chelation therapy) that likely add to their perceived validity.

Disclosure of self-care CAM ranged from fewer than a quarter of those using relaxation therapies to nearly half of those using megavitamins. Self-care is the most widely used CAM.^{26,27} Simultaneous use of vitamins, herbs and homeopathic remedies with over-the-counter and prescription medications is common,^{28,29} but often users are unaware of possible interactions between drugs and biologically based CAM therapies.¹⁷ Patients may consider it unimportant to report using herbs and other treatments readily available over the counter, as they often do not discuss pharmaceutical over-the-counter medications, such as analgesics, cold and allergy products and antacids.³⁰ Low patient disclosure of yoga, tai chi, qi gong and relaxation therapies is not surprising since patients may not see the use of these therapies as interacting with medical treatments and may not consider the medical encounter as a good source of information about these practices.

Corroborating previous research,⁶⁻¹⁰ we found that African Americans, Latinos and Asian Americans were less likely to disclose any CAM use to healthcare providers relative to non-Latino whites. Our hypothesis that racial/ethnic differences in disclosure are mitigated by access to and quality of conventional healthcare was partially confirmed. Using 2 national data sets, we examined specific factors of access to and quality of conventional care and patient disclosure of CAM use. When sociodemographics were considered, access issues such as insurance and cost were not associated with disclosure. Factors indicative of higher-quality care—including better source of usual conventional care in the NHIS and having a regular doctor and higher patient–provider relationship ratings in the HCQS—were positively

associated with greater disclosure and in the HCQS mitigated the effects of race/ethnicity. It is not surprising that sequential opportunities and familiar relationships, especially if combined with culturally competent care, foster communication. Findings indicate a need for improved quality of conventional medical care vis-à-vis patient-provider communication for minority populations.

In the NHIS, race/ethnicity contributed to nondisclosure regardless of access to and quality of conventional care, suggesting impediments to open communication between minority patients and their health providers. Differential treatment at the medical encounter based on patients' race/ethnicity, such as more information provided to and better questions asked of white patients than of African-American patients,³¹ is likely to contribute to limited disclosure of CAM in minority groups. For some minorities, distrust of conventional medicine—resulting from racial/ethnic injustices, such as the Tuskegee syphilis study and overuse of avoidable invasive procedures in minority populations³²—motivates CAM use as a sociopolitical alternative to the shortcomings of the healthcare system.³³⁻³⁵ If CAM and conventional treatments are polarized along sociopolitical lines, patients may withhold information about treatments they are using when they visit medical doctors. For immigrants, disclosure may be further impeded by unavailability of providers who speak their preferred language, different communication norms of medical systems in the country of origin, fear about immigration status and unfamiliarity with the American healthcare system.^{36,37}

Being female, having lower health status, a greater number of health conditions, living in the northeast and being married were also associated with increased likelihood of disclosure. Compared to men, women have more medical encounters, have longer appointments and are more engaged at them,³⁸ which provides more opportunity for disclosure. Poor health often translates to more frequent medical interactions and perhaps more active medication management, 2 conditions that could invite discussion of CAM use. In fact, when women use CAM and see a medical health doctor for the same health concern, disclosure rates are particularly high, ranging from 52–96% depending on the health condition.²⁸ The associations of place of residence and marital status with disclosure are less clear.

Study Strengths and Limitations

Using cross-sectional data, we were unable to determine causal relationships among study variables. It was not possible to determine, for instance, whether quality care increases disclosure or if discussion of CAM use improves patients' ratings of their patient-provider relationship. Second, the broad groupings of race/ethnicity in our analysis obscure cultural heterogeneity within groups that may influence behaviors such as CAM use and communication with medical providers. Finally, heterogeneous CAM therapies are not readily characterized as self-care and provider-based care, as the use of homeopathy and herbalism, for instance, can be prescribed by practitioners but are commonly used as self-care. The interplay of self-care and provider-based care in health behaviors that affect disclosure opportunities are not captured in these analyses.

To our knowledge, this is the first study to examine disclosure by specific CAM types and differences between self-care and provider-based CAM. The nationally representative samples of NHIS and HCQS coupled with data on sociodemographics and healthcare behaviors facilitated analyses of CAM disclosure in the context of access to and quality of conventional medical care. Oversampling of minorities in these data sets provides valuable information on CAM utilization in populations that have been underresearched.

CONCLUSION

Insufficient disclosure of CAM use to conventional providers represents a serious medical encounter communications challenge, particularly for self-treatment and among minority populations. Racial/ethnic variation in CAM disclosure seems driven primarily by differences in reporting self-care rather than provider-based CAM. Research on perceptions of legitimacy of CAM treatments and self-care in a medically pluralistic environment should inform professional training for healthcare providers.

Disclosure of CAM is associated with better patient–physician relationship and quality healthcare across racial/ethnic groups. Communication may be improved through patient-oriented interventions aimed at establishing consistent care and trusting rapport with providers. Patient education about the usefulness of disclosure should be culturally sensitive and targeted to special populations. CAM disclosure can educate physicians about specific cases and populations they serve, thus informing patient-driven clinical care and research.

ACKNOWLEDGEMENTS

The authors thank the Commonwealth Fund for conducting and providing public access to the Health Care Quality Survey and the National Center for Health Statistics for the National Health Interview Survey.

Financial support: This research was supported by grant #R21-AT02852 from the National Center for Complementary and Alternative Medicine (NCCAM), National Institutes of Health (NIH). Study analyses and interpretations presented here do not necessarily reflect the views or opinions of NCCAM or the NIH.

REFERENCES

1. Kessler R, Davis R, Foster DF, et al. Long-term trends in the use of complementary and alternative medical therapies in the United States. *Ann Intern Med* 2001;15:262–268. [PubMed: 11511141]
2. Barnes, P.; Powell-Griner, E.; McFann, K., et al. Complementary and alternative medicine use among adults: United States, 2002. Advance data from vital and health statistics. National Center for Health Statistics; Hyattsville, MD: 2004.
3. Druss BG, Rosenheck RA. Association between use of unconventional therapies and conventional medical services. *JAMA* 1999;282:651–656. [PubMed: 10517718]
4. Kronenberg F, Cushman LF, Wade CM, et al. Race/ethnicity and women's use of complementary and alternative medicine in the United States: Results of a national survey. *Am J Public Health* 2006;96:1236–1242. [PubMed: 16735632]
5. Eisenberg DM, Kessler RC, Van Rompay MI, et al. Perceptions about complementary therapies relative to conventional therapies among adults who use both: results from a national survey. *Ann Intern Med* 2001;135:344–351. [PubMed: 11529698]
6. Collins KS, Hughes DL, Doty MM, et al. Diverse communities, common concerns: Assessing health care quality for minority Americans, Findings from the Commonwealth Fund 2001 Health Care Quality Survey. 2002Commonwealth Fund
7. Kuo GM, Hawley ST, Weiss LT, et al. Factors associated with herbal use among urban multiethnic primary care patients: a cross-sectional survey. *BMC Complement Altern Med* 2004;4:18. [PubMed: 15575960]
8. Graham RE, Ahn AC, Davis RD, et al. Use of complementary and alternative medical therapies among racial and ethnic minority adults: Results from the 2002 National Health Interview Survey. *J Natl Med Assoc* 2005;97:535–545. [PubMed: 15868773]
9. Mehta DH, Phillips RS, Davis RB, et al. Use of complementary and alternative therapies by Asian Americans. Results from the National Health Interview Survey. *J Gen Intern Med* 2007;22:762–767. [PubMed: 17356956]
10. Ahn AC, Ngo-Metzger Q, Legedza ATR, et al. Complementary and alternative medical therapy use among Chinese and Vietnamese Americans: Prevalence, associated factors, and effects of patient–clinician communication. *Am J Public Health* 2006;96:647–653. [PubMed: 16380575]

11. Hu Z, Yang X, Ho PC, et al. Herb-drug interactions: a literature review. *Drugs* 2005;65:1239–1282. [PubMed: 15916450]
12. Skalli S, Zaid A, Soulaymani R. Drug interactions with herbal medicines. *Ther Drug Monit* 2007;29:679–686. [PubMed: 18043467]
13. Coon JT, Ernst E. Panax ginseng: a systematic review of adverse effects and drug interactions. *Drug Saf* 2002;25:323–344. [PubMed: 12020172]
14. Piscitelli SC, Burstein AH, Welden N, et al. The effect of garlic supplements on the pharmacokinetics of saquinavir. *Clin Infect Dis* 2002;34:234–238. [PubMed: 11740713]
15. Robinson A, McGrail MR. Disclosure of CAM use to medical practitioners: a review of qualitative and quantitative studies. *Complement Ther Med* 2004;12:90–98. [PubMed: 15561518]
16. Tasaki K, Maskarinec G, Shumay DM, et al. Communication between physicians and cancer patients about complementary and alternative medicine: exploring patients' perspectives. *Psychooncology* 2002;11:212–220. [PubMed: 12112481]
17. Vickers KA, Jolly KB, Greenfield SM. Herbal medicine: women's views, knowledge and interaction with doctors: a qualitative study. *BMC Complement Altern Med* 2006;6:40. [PubMed: 17156416]
18. Stevenson FA, Britten N, Barry CA, et al. Self-treatment and its discussion in medical consultations: how is medical pluralism managed in practice? *Soc Sci Med* 2003;57:513–527. [PubMed: 12791493]
19. Institute of Medicine. Unequal treatment: Confronting racial and ethnic disparities in health care. National Academies Press; Washington, DC: 2003.
20. U.S. Department of Health and Human Services. Office of Women's Health. The health of minority women. [02/18/08]. www.4women.gov/owh/pub/minority/.
21. National Center for Health Statistics. Data File Documentation, National Health Interview Survey, 2002 (machine readable data file and documentation). National Center for Health Statistics, Centers for Disease Control and Prevention; Hyattsville, MD: 2003.
22. Hogue, CJ.; Hargraves, MA.; Scott, KS. Minority health in America: findings and policy implications from the Commonwealth Fund minority health survey. Johns Hopkins University Press; Baltimore, MD: 2000.
23. National Healthcare Disparities Report. Agency for Healthcare Research and Quality. Rockville, MD: 2004. www.ahrq.gov/qual/nhdr04/nhdr04.htm
24. StataCorp. Stata statistical software: Release 9.0. Stata Corporation; College Station, TX: 2005.
25. Shive SE, Ma GX, Tan Y, et al. Racial differences in preventive and complementary health behaviors and attitudes. *J Health Disparities Res Prac* 2006;1:75–92.
26. Eisenberg DM, Davis R, Ettner S, et al. Trends in alternative medicine use in the United States, 1990–1997 Results of a follow-up national survey. *JAMA* 1998;280:1569–1575. [PubMed: 9820257]
27. Boon, H.; Welsh, S.; Kelner, M., et al. CAM practitioners and the professionalisation process.. In: Tovey, P.; Easthope, G.; Adams, J., editors. The mainstreaming of complementary and alternative medicine: Studies in social context. Routledge; London: 2004. p. 123-139.
28. Wade C, Chao MT, Cushman LF, et al. Medical pluralism among American women: Results of a national survey. *J Women's Health* 2008;17:829–840.
29. Gardiner P, Graham R, Legedza AT, et al. Factors associated with herbal therapy use by adults in the United States. *Altern Ther Health Med* 2007;13:22–29. [PubMed: 17405675]
30. Sleath B, Rubin RH, Campbell W, et al. Physician-patient communication about over-the-counter medications. *Soc Sci Med* 2001;53:357–369. [PubMed: 11439819]
31. Hall J, Roter D, Katz N. Meta-analysis of correlates of provider behavior in medical encounters. *Med Care* 1988;26:657–675. [PubMed: 3292851]
32. Franke, N.; Ohene-Frempong, J. Health care for African Americans: Availability, accessibility, and usability.. In: Ma, GX.; Henderson, G., editors. Rethinking ethnicity and health care: a sociocultural perspective. Charles C. Thomas Publisher Ltd.; Springfield, IL: 1999. p. 154-183.
33. Baer, HA. Biomedicine and alternative healing systems in America: Issues of class, race, ethnicity, & gender. University of Wisconsin Press; Madison, WI: 2001.
34. Bailey, E. Urban American health care. University Press of America Inc.; Lanham, MD: 1991.
35. Semmes, CE. Racism, health, and post-industrialism: a theory of African-American health. Praeger Publishers; Westport, CT: 1996.

36. Kraut AM. Healers and strangers. Immigrant attitudes toward the physician in America—a relationship in historical perspective. *JAMA* 1990;263:1807–1811. [PubMed: 2256968]
37. Ma GX. Barriers to the use of health services by Chinese Americans. *J Allied Health* 2000;29:64–70. [PubMed: 10874332]
38. Falik, M.; Collins, KS. *Women's health: The Commonwealth Fund Survey*. John Hopkins University Press; Baltimore, MD: 1996.

Table 1**A. Disclosure of complementary and alternative medicine (CAM) use by specific domain: Results from the 2002 National Health Interview Survey**

	No. of Users	% of Users Who Disclosed
Summary CAM Measures		
Any CAM	10,759	39.1
Provider-based CAM	3,453	46.8
Self-care CAM	9,365	34.2
Provider-Based CAM Domains		
Acupuncture	327	54.0
Ayurveda	19	53.2
Biofeedback	44	72.4
Chelation therapy	10	74.7
Chiropractic	2,146	52.2
Energy therapy	154	30.8
Folk medicine	36	33.3
Hypnosis	74	41.8
Massage	1,476	30.5
Naturopathy	82	40.5
Self-Care CAM Domains		
Natural herbs	5,732	33.3
Homeopathy	514	34.6
Special diets	1,030	38.4
Megavitamins	838	48.3
Yoga, tai chi, qi gong	1,792	24.7
Relaxation therapies	4,374	23.3

B. Disclosure of CAM use by race/ethnicity: Results from the 2002 National Health Interview Survey

	No. of Users	% of Users Who Disclosed	Odds Ratio (95% CI)
Any CAM			
Non-Latino whites	7,767	41.1	1.00
African Americans	1,152	34.5	0.75 (0.65, 0.87)
Latinos	1,459	31.1	0.65 (0.56, 0.75)
Asian Americans	381	26.7	0.52 (0.40, 0.68)
Provider-Based CAM			
Non-Latino whites	2,814	46.5	1.00
African Americans	216	54.7	1.39 (1.01, 1.92)
Latinos	328	46.8	1.01 (0.75, 1.37)

B. Disclosure of CAM use by race/ethnicity: Results from the 2002 National Health Interview Survey

	No. of Users	% of Users Who Disclosed	Odds Ratio (95% CI)
Asian Americans	95	42.9	0.86 (0.52, 1.43)
Self-Care CAM			
Non-Latino whites	6,603	36.5	1.00
African Americans	1,071	30.1	0.75 (0.64, 0.87)
Latinos	1,332	26.2	0.62 (0.53, 0.73)
Asian Americans	359	20.4	0.45 (0.33, 0.61)

Statistically significant odds ratios ($p < 0.05$) are indicated in boldface; CI: Confidence interval

Access to and quality of conventional care of complementary and alternative medicine (CAM) users by race/ethnicity and disclosure of CAM use

Table 2

	Non-Latino Whites	African Americans	Latinos	Asian Americans	All CAM Users [§]	Disclosed Any CAM Use ^{§§}
2002 National Health Interview Survey						
Health Insurance ⁺						
Private	80.3	67.6	53.0	76.1	76.7 ^{***}	40.6 ^{***}
Public	16.6	17.9	18.2	11.5	16.6 [*]	47.8 ^{***}
None	10.8	16.7	30.7	13.8	13.1 ^{***}	24.6 ^{***}
Postponed Care Due to Cost: No	83.5	75.2	77.2	89.2	82.4	38.9
Yes	16.5	24.8	22.8	10.8	17.6 ^{***}	40.2
Delayed Medical Care: ⁺⁺ No	86.9	84.4	85.0	84.5	86.4	38.2
Yes	13.1	15.6	15.0	15.6	13.6	45.1 ^{***}
Changed Place of Care: No	87.4	89.2	87.7	81.9	87.4	41.5
Yes	12.6	10.8	12.3	18.1	12.6 [*]	45.8 [*]
Usual Source of Conventional Care						
No usual place	10.4	11.9	21.5	17.4	11.8 ^{***}	16.9 ^{***}
Hospital emergency room	0.54	2.5	1.3	0	0.8	32.4
Hospital outpatient	1.1	3.4	1.8	1.4	1.3	32.7
Clinic or health center	14.0	15.7	17.1	12.2	14.3	38.2
Doctor's office or HMO	74.0	66.5	58.3	69.1	71.8	43.4
2001 Health Care Quality Survey						
Health Insurance						
Private	72.9	68.5	58.2	73.1	71.2 ^{**}	73.4 ^{***}
Public	14.3	13.0	9.9	14.2	13.8	74.3
None	12.8	18.5	31.9	12.7	15.0 ^{***}	49.9 ^{***}
Postponed Care Due to Cost: No	74.0	78.4	75.3	75.3	74.6	70.1
Yes	26.0	21.6	24.7	24.7	25.4	69.3
Given Wrong Medicine or Dose: No	77.3	75.5	80.5	91.3	78.0	68.9

	Non-Latino Whites	African Americans	Latinos	Asian Americans	All CAM Users [§]	Disclosed Any CAM Use ^{§§}
Percents						
Yes	22.7	24.5	19.5	8.7	22.0	73.3
Has a Regular Doctor: No	17.8	24.7	43.7	26.8	21.2 ^{***}	49.4 ^{***}
Yes	82.2	75.3	56.3	73.2	78.9	75.3
Usual Source of Conventional Care						
No usual care	2.1	1.2	7.3	1.0	2.4 ^{***}	38.4 ^{***}
Emergency room	3.0	10.8	6.3	4.7	4.1	60.1
Hospital outpatient	2.8	11.1	2.9	6.6	3.6	56.5
Clinic or health center	7.4	8.1	18.7	4.3	8.4	54.6
Doctor's office or HMO	84.7	68.7	64.9	83.4	81.5	74.2
Satisfaction with Conventional Care (Mean)	3.21	3.14	2.87	2.70	3.15 ^{***}	3.28 ^{***}
Patient-Provider Relationship (Mean)	2.08	2.05	1.76	1.63	2.03 ^{***}	2.15 ^{***}

[§] Asterisks in this column indicate statistically significant differences between racial/ethnic groups

^{§§} Asterisks in this column indicate statistically significant differences between those who disclosed CAM use and those who did not disclose CAM use

⁺ Percents may total to more than 100% because respondents may have both public and private insurance

⁺⁺ Possible reasons for delays in getting medical care included transportation difficulties, getting an appointment and waiting time prior to seeing the doctor

* p<0.05

** p<0.01

*** p<0.001

Table 3

Adjusted odds ratios and 95% confidence intervals of disclosure of complementary and alternative medicine to medical practitioner based on 2002 National Health Interview Survey data*

	Model 1		Model 2	
	AOR	95% CI	AOR	95% CI
Age	1.01	(1.00–1.01)	1.00	(1.00–1.01)
Marital Status				
Not married		1.00		1.00
Married	1.22	(1.12–1.34)	1.15	(1.04–1.27)
Region of Residence				
West		1.00		1.00
Northeast	1.24	(1.08–1.42)	1.16	(1.01–1.34)
Midwest	1.06	(0.92–1.22)	1.01	(0.88–1.16)
South	0.96	(0.84–1.09)	0.95	(0.83–1.09)
Self-Reported Health Status	0.94	(0.89–0.98)	0.92	(0.87–0.96)
Number of Health Conditions	1.31	(1.24–1.37)	1.26	(1.20–1.33)
Employment	0.99	(0.89–1.10)	0.93	(0.82–1.06)
Sex				
Male		1.00		1.00
Female	1.35	(1.22–1.49)	1.25	(1.13–1.40)
Race/Ethnicity				
Non-Latino white		1.00		1.00
African American	0.80	(0.68–0.93)	0.77	(0.66–0.91)
Latino	0.67	(0.57–0.79)	0.74	(0.62–0.88)
Asian American	0.57	(0.44–0.73)	0.56	(0.45–0.79)
<i>Access to and Quality of Biomedical Care</i>				
Health Insurance				
None				1.00
Private			1.15	(1.00–1.32)
Public			0.98	(0.82–1.16)
Changed Place of Care				
No				1.00
Yes			1.20	(1.03–1.40)
Usual Source of Conventional Medical Care			1.16	(1.05–1.29)

* Model 1 assessed the association of race/ethnicity and CAM disclosure controlling for confounding variables; model 2 included access to and quality-of-care measures to assess their mediating effects on the association between race/ethnicity and CAM disclosure. Statistically significant AORs ($p < 0.05$) are indicated in boldface; AOR: Adjusted odds ratio; CI: Confidence interval

Table 4

Adjusted odds ratios and 95% confidence intervals of disclosure of complementary and alternative medicine to medical practitioner based on 2001 Health Care Quality Survey data*

	Model 1		Model 2	
	AOR	95% CI	AOR	95% CI
Age	1.01	(0.99–1.01)	0.99	(0.98–1.01)
Marital Status				
Not married		1.00		1.00
Married	1.90	(1.40–2.57)	1.88	(1.36–2.62)
Region of Residence				
West		1.00		1.00
Northeast	1.96	(1.24–3.11)	1.89	(1.16–3.09)
Midwest	1.29	(0.81–2.07)	1.30	(0.78–2.17)
South	1.01	(0.69–1.49)	1.05	(0.70–1.57)
Number of Health Conditions	1.39	(1.15–1.67)	1.30	(1.07–1.58)
Education	1.15	(1.02–1.31)	1.11	(0.97–1.26)
Length of Time in the United States	1.14	(0.86–1.50)	1.02	(0.75–1.40)
Race/Ethnicity				
Non-Latino white		1.00		1.00
African American	0.62	(0.40–0.95)	0.64	(0.40–1.01)
Latino	0.57	(0.36–0.90)	0.63	(0.37–1.06)
Asian American	0.84	(0.46–1.54)	0.81	(0.42–1.57)
<i>Access to and Quality of Biomedical Care</i>				
Health Insurance				
None				1.00
Private			1.38	0.86–2.20
Public			1.80	0.99–3.25
No Regular Doctor				1.00
Regular Doctor			1.90	(1.28–2.82)
Usual Source of Care			1.08	(0.89–1.30)
Satisfaction with Conventional Care			0.94	(0.74–1.20)
Patient–Provider Relationship			1.37	(1.03–1.82)

* Model 1 assessed the association of race/ethnicity and CAM disclosure controlling for confounding variables; model 2 included access to and quality-of-care measures to assess their mediating effects on the association between race/ethnicity and CAM disclosure. Statistically significant AORs are indicated in boldface; AOR: Adjusted odds ratio; CI: Confidence interval