Prevalence of Complementary and Alternative Medicine Use: State-Specific Estimates From the 2001 Behavioral Risk Factor Surveillance System

| Ann P. Rafferty, PhD, Harry B. McGee, MPH, Corinne E. Miller, DDS, PhD, and Michele Reyes, PhD

Use of complementary and alternative medicine (CAM) among adults in the United States is prevalent and increasing,[1,2] although estimates vary as to the exact level of its use.[3,4] The Behavioral Risk Factor Surveillance System (BRFSS) is an established system that provides timely, state-specific estimates of risk factors and healthful behaviors related to the leading causes of morbidity and mortality. We investigated the feasibility of using this ongoing surveillance system to estimate the prevalence of CAM use among Michigan adults.

METHODS

The BRFSS consists of annual, population-based telephone surveys of adults conducted by state health departments in cooperation with the Centers for Disease Control and Prevention (CDC).[5] All states use a standardized survey instrument provided by the CDC and then have the option of adding other questions to this core instrument. We added questions to the 2001 Michigan BRFSS that asked respondents about their use of 11 specific types or groups of CAM therapies in the previous 12 months. We asked users whether they had discussed their CAM use with their regular medical doctor, the reason for their CAM use, and whether they found it helpful. To account for weighting and the complex sampling de-

TABLE 1—Prevalence of Complementary and Alternative Medicine (CAM) Use Among Michigan Adults Within the Previous 12 Months, by Sex

CAM Therapy	Total (N = 3764), % (95% CI)	Men (n = 1491), % (95% CI)	Women (n = 2273), % (95% CI)
Herbal supplements[a]	20.5 (19.1, 21.9)	17.5 (15.4, 19.6)	23.2 (21.3, 25.1)
Special diets[a]	12.6 (11.5, 13.7)	11.2 (9.5, 12.9)	13.9 (12.4, 15.4)
Chiropractic therapy	12.2 (11.0, 13.4)	12.2 (10.4, 14.0)	12.2 (10.7, 13.7)
Other dietary supplements[a]	10.8 (9.8, 11.8)	8.4 (6.9, 9.9)	13.0 (11.5, 14.5)
Manipulative therapies (e.g., massage therapy, osteopathic manipulation)[a]	10.5 (9.4, 11.6)	8.8 (7.2, 10.4)	12.0 (10.6, 13.4)
Large-dose vitamins or minerals[a]	8.2 (7.3, 9.1)	6.3 (5.0, 7.6)	9.9 (8.6, 11.2)
Meditation, imagery, hypnosis, or biofeedback	7.2 (6.3, 8.1)	6.6 (5.2, 8.0)	7.7 (6.5, 8.9)
Other mind–body therapies (e.g., tai chi, yoga, chi gong)[a]	5.1 (4.3, 5.9)	3.1 (2.1, 4.1)	6.9 (5.7, 8.1)
Energy therapies (e.g., therapeutic touch, reiki)[a]	4.5 (3.8, 5.2)	3.0 (2.1, 3.9)	5.8 (4.8, 6.8)
Homeopathic, naturopathic, or ayurvedic therapies	3.8 (3.1, 4.5)	3.3 (2.3, 4.3)	4.2 (3.3, 5.1)
Acupuncture[a]	1.0 (0.7, 1.3)	0.6 (0.2, 1.0)	1.3 (0.8, 1.8)
Other CAM	1.9 (1.4, 2.4)	1.5 (0.8, 2.2)	2.3 (1.6, 3.0)
Any CAM[a,b]	49.7 (47.9, 51.5)	45.0 (42.2, 47.8)	53.8 (51.5, 56.1)

Note. CI = confidence interval.
[a]Significant difference by sex, χ^2 test ($P < .05$).
[b]Reported use of at least 1 CAM therapy in previous 12 months.

sign, we used SUDAAN[6] to calculate prevalence estimates, 95% confidence intervals, and χ^2 tests and to generate multiple logistic regressions.

RESULTS

Our study indicated that 49.7% of Michigan adults had used at least 1 CAM therapy in the previous 12 months (Table 1). The most frequently used therapies were herbal supplements (20.5%), special diets (12.6%), chiropractic therapy (12.2%), and other (nonvitamin, nonherbal) dietary supplements (10.8%). CAM use was higher among women than men both overall (53.8% vs 45.0%) and within most of the specific CAM therapy groups.

Our data show that in the previous 12 months, 25.6% of Michigan adults had used 1 CAM therapy, 12.1% had used 2, 6.1% had used 3, and 5.9% had used 4 or more; 50.3% had not used any CAM (data not shown). Results of a multiple logistic regression indicate that the prevalence of any CAM use was significantly higher among women than men and among Whites than Blacks, and that use increased with higher levels of education and with poorer general health status (Table 2).

Nearly half (45.9%) of CAM users had discussed at least some of their CAM use with their regular medical doctor. Among them, the majority (61.3%) had received a recommendation from their doctor for at least some of the CAM therapies they had used. Approximately one quarter (24.4%) of all CAM users had used these therapies to treat a disease or condition, 6.8% to prevent a disease or condition, 42.5% to promote their overall health, and the remainder for a combination of the above or for some other reason. The majority of CAM users appeared satisfied with these therapies, finding all of them helpful (83.2%) or at least some of them helpful (5.8%) (data not shown).

DISCUSSION

Our estimate that nearly half of all Michigan adults had used at least 1 CAM therapy in the previous 12 months is somewhat higher than the 1997 national estimate reported by Eisenberg et al. (42.1%),[1] which may reflect geographic differences, questionnaire differences, or an increase in CAM use since 1997. We found demographic relationships similar to those reported previously; that is, higher CAM use among women, Whites,[4] those with more education, and those reporting poorer health status.[7]

There are several limitations to this study. Because of the evolving nature of CAM, definitions of CAM therapies can be problematic; what may be considered complementary or alternative by both professionals and patients may change over time. Our estimate for the prevalence of CAM special diets is probably an overestimate owing to the inclusion of some medical diets (e.g., diets for diabetes and high cholesterol). These data were self-reported and may include reporting errors related to respondents' estimation and recall. These data are also limited by the coverage- and nonresponse-related errors that affect all telephone surveys.

We expect the trend of increasing CAM use to continue, especially as more traditional medical care providers become more involved. Many managed care organizations are providing coverage for some CAM therapies,[8] medical schools are starting to offer classes covering aspects of CAM,[9] and doctors report referring their patients for CAM therapies.[10] Our finding that fewer than half of CAM users had discussed their use with their medical doctor may indicate a need for further education of both patients and doctors. Given its apparent popularity and potential effect on the health of the population, CAM use is an area that should be monitored by the public health community. This study represents the first time in Michigan, and to our knowledge in the United States, that a module of questions related to CAM has been included in a state-level BRFSS, illustrating that the BRFSS can provide a means to monitor CAM use. ■

About the Authors
Ann P. Rafferty, Harry B. McGee, and Corinne E. Miller are with the Bureau of Epidemiology, Michigan Department of Community Health, Lansing. Michele Reyes is with the Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention, Atlanta, Ga.

Requests for reprints should be sent to Ann P. Rafferty, PhD, Division of Epidemiology Services, Bureau of Epidemiology, Michigan Department of Community Health, 3423 N M. L. King Jr Blvd, PO Box 30195, Lansing, MI 48909 (e-mail: raffertya@michigan.gov).

This brief was accepted June 6, 2002.

TABLE 2—Prevalence and Adjusted Odds Ratios[a] of Any Complementary and Alternative Medicine[b] (CAM) Use Among Michigan Adults in the Previous 12 Months

	Prevalence, % (95% CI)	Adjusted Odds Ratio (95% CI)
Age, y		
18–24	43.7 (37.7, 49.7)	(referent)
25–34	44.7 (40.4, 49.0)	0.89 (0.63, 1.26)
35–44	49.4 (45.6, 53.2)	1.09 (0.78, 1.52)
45–54	54.7 (50.8, 58.6)	1.24 (0.88, 1.74)
55–64	53.7 (49.0, 58.4)	1.30 (0.91, 1.86)
65–74	52.5 (46.9, 58.1)	1.09 (0.73, 1.62)
≥ 75	51.3 (45.2, 57.4)	1.17 (0.77, 1.78)
Sex		
Male	45.0 (42.2, 47.8)	(referent)
Female	53.8 (51.5, 56.1)	1.49 (1.27, 1.76)
Race		
White	51.4 (49.5, 53.3)	(referent)
Black	39.2 (34.0, 44.4)	0.59 (0.45, 0.77)
Education		
< High school	40.6 (35.1, 46.1)	(referent)
High school graduate	44.2 (41.1, 47.3)	1.44 (1.05, 1.98)
Some college	55.0 (51.7, 58.3)	2.32 (1.67, 3.22)
College graduate	54.5 (51.2, 57.8)	2.26 (1.60, 3.19)
Household income, $		
< 20 000	48.0 (43.1, 52.9)	(referent)
20 000–34 999	48.2 (44.4, 52.0)	0.94 (0.72, 1.23)
35 000–49 999	48.4 (44.0, 52.8)	0.93 (0.69, 1.25)
50 000–74 999	49.7 (45.2, 54.2)	0.93 (0.68, 1.27)
≥ 75 000	52.1 (47.8, 56.4)	0.98 (0.71, 1.35)
General health[c]		
Excellent	45.0 (40.9, 49.1)	(referent)
Very good	50.6 (47.6, 53.6)	1.21 (0.95, 1.53)
Good	49.1 (45.9, 52.3)	1.39 (1.08, 1.78)
Fair	53.5 (48.3, 58.7)	1.86 (1.34, 2.59)
Poor	60.3 (51.7, 68.9)	2.18 (1.35, 3.53)

Note. CI = confidence interval.
[a]Adjusted odds ratios from a multiple logistic regression, with any CAM use as the dependent variable and age group, sex, race category, education, household income, and general health status as the independent variables.
[b]Reported using at least 1 type of CAM therapy in the previous 12 months.
[c]Response to the question, "Would you say in general your health is excellent, very good, good, fair, or poor?"

in alternative medicine use in the United States, 1990–1997. *JAMA.* 1998;280:1569–1575.

2. Kessler RC, Davis RB, Foster DF, et al. Long-term trends in the use of complementary and alternative medical therapies in the United States. *Ann Intern Med.* 2001;135:262–268.

3. Ernst E. Prevalence of use of complementary/ alternative medicine: a systematic review. *Bull World Health Organ.* 2000;78:252–257.

4. Bausell RB, Lee W-L, Berman BM. Demographic and health-related correlates of visits to complementary and alternative medical providers. *Med Care.* 2001;39: 190–196.

5. Nelson DE, Holtzman D, Waller M, et al. Objectives and design of the Behavioral Risk Factor Surveillance System. Paper presented at: Section on Survey Research Methods, American Statistical Association National Meeting; August 10, 1998; Dallas, Tex.

6. Shah BV, Barnwell BG, Bieler GS. *SUDAAN User's Manual, Release 7.5.* Research Triangle Park, NC: Research Triangle Institute; 1997.

7. Astin JA. Why patients use alternative medicine: results of a national study. *JAMA.* 1998;279: 1548–1553.

8. Pelletier KR, Astin JA, Haskell WL. Current trends in the integration and reimbursement of complementary and alternative medicine by managed care organizations (MCOs) and insurance providers: 1998 update and cohort analysis. *Am J Health Promot.* 1999;14: 125–133.

9. Wetzel MS, Eisenberg DM, Kaptchuk TJ. Courses involving complementary and alternative medicine at US medical schools. *JAMA.* 1998;280:784–787.

10. Borkan J, Neher JO, Anson O, Smoker B. Referrals for alternative therapies. *J Fam Pract.* 1994;39: 545–550.

Contributors

A.P. Rafferty contributed to the conception and design of the study, analysis and interpretation of the data, and drafting of the brief. H.B McGee and M. Reyes contributed to the conception and design of the study and revision of the brief. C.E. Miller contributed to the analysis and interpretation of the data and revision of the brief.

Human Participant Protection

The Michigan Behavioral Risk Factor Surveillance System was determined by the Michigan Department of Community Health Institutional Review Board to be exempt from review.

References

1. Eisenberg DM, Davis RB, Ettner SL, et al. Trends