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**Original Article**

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**Patient Disclosure about Herb and Supplement Use among Adults in the US****Jae Kennedy<sup>1</sup>, Chi-Chuan Wang<sup>1</sup> and Chung-Hsuen Wu<sup>2</sup>**

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Analyses of 2002 National Health Interview supplement on complementary and alternative medicine (NHIS/CAM) indicate that approximately 38 million adults in the US (18.9% of the population) used natural herbs or supplements in the preceding 12 months, but only one-third told their physician about this use. The objectives of this study are: (i) to determine subpopulation rates of patient–physician communication about herbal product and natural supplement use and (ii) to identify the relative influence of patient factors and interaction factors associated with patient–physician communication about herb and supplement use. Logistic secondary analysis was done by using the complementary and alternative medicine supplement of the 2002 National Health Interview Survey. Subjects were a random stratified sample of US adults who used herbs in the past 12 months ( $n = 5\,196$ ) and self-reported rates of disclosure to physicians about herb and supplement use. Results show that disclosure rates were significantly lower for males, younger adults, racial and ethnic minorities and less intensive users of medical care. Across subpopulations, disclosure was the exception rather than the norm. Given the potential risks of delayed or inappropriate treatment and adverse drug reactions and interactions, physicians should be aware of herb and supplement use and counsel patients on the potential risks and benefits of these treatments.

**Keywords:** complementary and alternative medicine–herbal medicine–patient disclosure–physician–patient communication

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A recent national survey indicates that only 33% of patients who use herbs or supplements discuss this usage with their physician (1). Using data from the Complementary and Alternative Medicine supplement to the 2002 National Health Interview Survey (NHIS/CAM), the objectives of this secondary analysis are: (i) to determine subpopulation rates of patient–physician communication about herbal product and natural supplement use and (ii) to identify the relative influence

of patient factors and interaction factors associated with patient–physician communication about herb and supplement use.

**The Growing Use of Herbs and Supplements**

The use of herbal products and natural supplements is increasingly common in the US (2). Analyses of 2002 NHIS/CAM indicate that approximately 38 million adults in the US (18.9% of the population) used natural herbs or supplements in the preceding 12 months (3). Use rates are higher for women, middle-aged adults, racial minorities, college graduates and adults who have

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difficulty paying for conventional medical care and prescription drugs (1).

Clinicians have raised a number of concerns about the growing popularity of herbs and supplements. While some of these products appear to be relatively safe and potentially efficacious (4,5), others can cause adverse drug reactions (6). Chemical assays of these products show significant variability in composition and strength of therapeutic agents (7) and, in some cases, the presence of dangerous adulterants (8) and contaminants (9). Use of prescription or over-the-counter medications, in conjunction with herbal preparations, places patients at risk for a variety of serious drug interactions (10).

### **The Problem of Patient Disclosure**

American physicians tend to be skeptical of the benefits of herbs and supplements (11), they rarely use these products to treat themselves (12) and are unlikely to recommend them to their patients (13). Nonetheless, physicians are often called upon to talk and advise their patients about the risks and benefits of these products (14–19). Unfortunately, surveys indicate that patient-physician discussion about the use of herbs and other complementary and alternative therapies is the exception rather than the norm. While most CAM users in the US have regular physicians (20) and say that they want to discuss their use of non-conventional therapies (21), most do not (1,22).

### **Factors Associated with Disclosure**

A variety of social, economic and psychologic factors can influence disclosure of herb and supplement use. A review of CAM studies and the broader literature on physician communication (18,23,24) suggest that disclosure is a function of both patient (25–33) and physician (11,12,34–39) characteristics. Because the NHIS/CAM is a population-based survey, this analysis necessarily focuses exclusively on patient attributes, including self-reported frequency of interaction with conventional medical providers (see discussion for study limitations).

Based on prior CAM research, it is hypothesized that disclosure is negatively associated with minority group status (25,32) and positively associated with socioeconomic status (25,26,39). Because patient disclosure requires regular interaction with medical providers, it is also hypothesized that herb and supplement users with more frequent doctor or hospital visits will be more likely to disclose.

### **Significance of the Study**

Patient disclosure of herb and supplement use to physicians is an important public health issue. Low rates of disclosure may place some populations at greater

risk for clinical complications arising from adverse drug reactions or interactions and from delay or substitution of appropriate conventional medical treatments. This study provides the first detailed US national estimates of patient disclosure about herb and supplements use and identifies the relative influence of factors associated with disclosure.

## **Methods**

### **The National Health Interview Survey (NHIS)**

This study uses data from the NHIS, a continuing household probability survey representative of the civilian non-institutionalized population of the US conducted by the Centers for Disease Control's National Center for Health Statistics (NCHS). The NHIS is widely regarded by the research community as the most comprehensive and current source of population data on health in the US (40). Various special supplements are administered, along with the core surveillance items of the NHIS to address specific policy and population concerns. The NHIS/CAM is a special supplement to the 2002 Sample Adult Core ( $n = 31\,044$ ).

The NHIS employs a multistage stratified random sampling strategy. NCHS contractors conduct face-to-face interviews with an available household member and enter responses into a handheld computer that codes conditional responses and performs real-time consistency checks. Descriptive data on all household members are collected for the Family Core Survey and an adult is randomly selected for more detailed questions in the Sample Adult Core Survey (if there are children in the household, data are also collected for a randomly selected child in the Sample Child Core Survey).

The NHIS is a household survey and does not cover persons living in institutional settings such as military barracks, prisons, nursing homes, convalescent facilities, group homes and mental hospitals, and an inference cannot be made to these populations. According to 2002 NHIS user's guide,(41) the total household response rate was approximately 90%. About 7% of the non-interview rate was the result of respondent refusal and unacceptable partial interviews. The remaining 3% were primarily the result of failure to locate an eligible respondent at home after repeated calls.

NCHS weights, derived from Decennial Census data, are used to calculate prevalence estimates of patient disclosure that are generalizable to the US population. To address concerns regarding sampling error in complex household surveys, the SUDAAN CROSSTABS procedure was used to generate standard errors for all estimates (42) and SUDAAN LOGISTIC was used to calculate adjusted and unadjusted odds ratios and 95% confidence intervals.

### Operational Definition of Patient Disclosure

In the NHIS/CAM survey, 5 787 adults answered yes to the following question: ‘During the past 12 months, did you use natural herbs for your own health or treatment (e.g. ginger, echinacea or black cohosh; including teas, tinctures, and pills)?’ For a detailed profile of herb users and a description of the type and frequency of herbs used, see Kennedy (1).

Herb users were asked, ‘During the past 12 months, did you let any of these conventional medical professionals know about your use of natural herbs?’ The following categories of professionals were listed: (i) medical doctor; (ii) nurse practitioner/physician assistant; (iii) psychiatrist and (iv) dentist. About 96% of respondents who said they disclosed herbal product use to one or more conventional health professionals selected the first option - medical doctors. Aggregating categories (i) and (iii) boosts this number slightly, to about 97%. Due to this response pattern and because of the focus on physician-patient communication in the clinical literature, disclosure was operationally defined as follows:

- (a) 1 = used herbs in past 12 months and told their physician (sample  $n = 1\ 851$ ).
- (b) 0 = used herbs in past 12 months and did not tell their physician ( $n = 3\ 345$ ).
- (c) omitted = did not use herbs in past 12 months ( $n = 25\ 257$ ); used herbs in past 12 months and did not see a physician ( $n = 494$ ); used herbs and only told nurse practitioner, physician assistant, or dentist ( $n = 61$ ); refused, not ascertained, or don't know ( $n = 36$ ).

### Results

Table 1 shows patient disclosure rates among respondents who used herbs and saw a physician in the preceding 12 months. Unadjusted (UAOR) and adjusted odds ratios (AOR) with associated 95% confidence intervals (CI) were calculated for relevant patient and physician interaction characteristics of the study population. Except where noted, this results section will focus on the full multivariate model and adjusted odds ratios.

#### Sociodemographic Factors

The logistic model identified a number of demographic differences in patient disclosure rates. Women were more likely to discuss herb use with their physician than men (AOR = 1.2; 95% CI = 1.0–1.4) and so were older adults (e.g. adults aged 45–64 were 1.6 times more likely to disclose than those aged 18–24). Black/African American (AOR = 0.8; 95% CI = 0.6–1.0) and Asian (AOR = 0.5; 95% CI = 1.1–1.4) respondents were less likely to disclose herb use than white respondents, Hispanics were less

likely to disclose than non-Hispanics (AOR = 0.7; 95% CI = 0.5–0.9), and non-citizens were less likely to disclose than citizens (AOR = 0.5; 95% CI = 0.3–0.8).

#### Socioeconomic Factors

Socioeconomic differences (i.e. family income, education) in disclosure rates were less pronounced and did not prove to be significant predictors in the multivariate model. Adults who were covered under public health insurance programs (i.e. Medicare and/or Medicaid) were somewhat more likely to talk about herb use with their physicians (AOR = 1.4; 95% CI = 1.0–0.8), while people without insurance were less likely to disclose (AOR = 0.8; 95% CI = 0.6–1.1) than those with private insurance only.

#### Health Factors

Adults in poor health were more likely to discuss herb use with their physicians, but after controlling for other factors, this predictor was not statistically significant (AOR = 1.1; 95% CI = 0.8–1.4). Two measures of health care utilization, number of physician visits and hospitalization, were more strongly associated with disclosure, suggesting that poor health increases use of medical services, which in turn creates more opportunities to discuss herb use and possibly greater incentives for doing so. Adults who had been hospitalized in the past 12 months were 1.4 times more likely to disclose than those who had not (95% CI = 1.1–1.7). Those who had visited a physician six or more times in the past year were 1.8 times more likely to disclose herb or supplement use than those with only one visit (95% CI = 1.4–2.2).

### Discussion

This study shows that most Americans who use herbs and supplements do so in addition to conventional medical treatment, but only about a third discuss their decision with a physician. Despite personal or professional reservations about the efficacy and safety, physicians need to know their patients' self-treatment regimens to diagnose and treat them effectively (43,44). Changes in the type and frequency of patient-physician communication about herb and supplement use are therefore required. Understanding the relative rates of non-disclosure in the patient population can help target physician and patient interventions.

#### At-Risk Populations

The finding that frequent or intensive users of conventional medical care were more likely to disclose use of herbs or supplements was encouraging. Heavy users

**Table 1.** Factors associated with patient disclosure of herb and supplement use among adults who have visited a physician and used herbs in the preceding 12 months

	Disclosure rates	Unadjusted OR (95% CI)	<i>P</i>	Adjusted OR (95% CI)	<i>P</i>
Sex			<i>P</i> <0.001		0.012
Male	31.1%	1.0 reference		1.0 reference	
Female	39.4%	1.4 (1.3–1.7)		1.2 (1.0–1.4)	
Age			<i>P</i> <0.001		<i>P</i> <0.001
18–24	27.9%	1.0 reference		1.0 reference	
25–44	30.4%	1.1 (0.9–1.5)		1.1 (0.8–1.5)	
45–64	41.3%	1.8 (1.4–2.4)		1.6 (1.2–2.1)	
≥65	49.3%	2.2 (1.6–3.1)		1.5 (1.0–2.2)	
Race			<i>P</i> <0.001		0.001
White	37.4%	1.0 reference		1.0 reference	
Black/African American	31.2%	0.8 (0.6–0.9)		0.8 (0.6–1.0)	
Asian	18.4%	0.4 (0.2–0.6)		0.5 (0.3–0.7)	
Other Race	25.1%	0.6 (0.4–0.8)		1.1 (0.6–1.8)	
Multiple Race	47.4%	1.5 (1.0–2.3)		1.5 (1.0–2.3)	
Ethnicity			<i>P</i> <0.001		0.004
Hispanic	24.8%	0.6 (0.5–0.7)		0.7 (0.5–0.9)	
NonHispanic	37.2%	1.0 reference		1.0 reference	
Citizenship			<i>P</i> <0.001		0.002
U.S. Citizen	37.3%	1.0 reference		1.0 reference	
Not U.S. Citizen	15.9%	0.3 (0.2–0.4)		0.5 (0.3–0.8)	
Education Level			0.223		0.2
High school grad or less (0–12 years)	34.6%	0.9 (0.8–1.1)		0.9 (0.8–1.1)	
College (12+ years)	36.7%	1.0 reference		1.0 reference	
Annual Family Income			0.042		0.056
\$20 000 or more	36.4%	1.0 reference		1.0 reference	
Less than \$20 000	31.7%	0.8 (0.7–1.0)		0.8 (0.6–1.0)	
Current Insurance Coverage			<i>P</i> <0.001		0.015
Private health insurance only	35.6%	1.0 reference		1.0 reference	
Public health insurance	46.2%	1.6 (1.3–1.8)		1.4 (1.0–1.8)	
No health insurance	22.8%	0.5 (0.4–0.7)		0.8 (0.6–1.1)	
Self-Assessed Health Status			<i>P</i> <0.001		0.67
Poor–Fair	44.5%	1.5 (1.2–1.8)		1.1 (0.8–1.4)	
Good–Excellent	34.9%	1.0 reference		1.0 reference	
Hospitalized in Past 12 Months			<i>P</i> <0.001		0.004
Yes	49.4%	1.9 (1.5–2.3)		1.4 (1.1–1.7)	
No	34.5%	1.0 reference		1.0 reference	
MD Visits in Past 12 Months			<i>P</i> <0.001		<i>P</i> <0.001
1	30.5%	1.0 reference		1.0 reference	
2–5	35.1%	1.2 (1.0–1.5)		1.1 (0.9–1.8)	
6 or more	49.1%	2.2 (1.8–2.7)		1.8 (1.4–2.2)	

Source: *CAM Supplement to the 2002 National Health Interview Survey*, National Center for Health Statistics (2003). Hosmer-Lemeshow Goodness of Fit Test ( $\chi^2, P$ ) 11.8 (0.16).

of conventional medical care are more likely to have serious or chronic conditions and more likely to take prescription medications. They are, therefore, presumably more vulnerable to adverse drug reactions and

interactions, and their treating physicians should be informed about herb and supplement use. But even in this critical population, non-disclosure was quite common. In other groups that tend to have high rates

of adherence to conventional medical treatment regimens—women, the elderly, college graduates—disclosure rates were also higher than average, but no group reached even the 50% level.

Non-disclosure of herb and supplement use was particularly common among racial and ethnic minority groups and among non-citizens. Language barriers, cultural differences and limitations in access to conventional medical care may account for these differences. Many of these adults have a cultural tradition of herbalism and are more likely to use herbs and supplements than the majority population (45–49). High rates of use, combined with low rates of disclosure, make these populations particularly vulnerable. Knowledge of traditional health practices and open discussion of herbal treatments are therefore critical components of culturally competent medical care (50–53).

### Study Limitations

As noted in the introduction, this study focuses exclusively on patient attributes, but disclosure is best seen as a relationship between physicians and patients (43). Relevant physician attributes would include type and recency of medical training, medical specialty, communication style, cultural sensitivity, knowledge of and attitudes toward complementary and alternative therapies. The quality as well as the frequency of interactions should also be considered. Increasingly short office visits (54), possibly aggravated in the US by managed care (55), are a source of frustration for both physicians and patients (56,57). The factors should be included in any comprehensive research on disclosure.

The NHIS/CAM inclusion criteria for herb use do not capture important differences in type and intensity of utilization. As one reviewer noted, aggregating ‘a woman who uses soy to reduce the number of hot flashes together with someone who uses scores of different herbs to treat an array of conditions’ raises some obvious questions about the relative risk of non-disclosure. Failure to discuss occasional herb or supplement use, particularly for preparations with a good safety profile and proven therapeutic benefit, is not a matter of great concern. However, the undisclosed and unsupervised use of multiple herbs and supplements, particularly those that have not been subject to scientific scrutiny, is a critical issue for patient safety. Development of reasonably detailed risk profiles for herbal preparations is an obvious research priority.

### Medical Practice Implications

Patient–physician communication is of pivotal importance in medical practice (58), and the use of herbs and other CAM is an important topic of conversation (18,59,60). In order to discuss CAM with patients,

physicians need to be familiar with common complementary and alternative treatments. There are calls to add CAM training to the already crowded medical school curricula (61,62) as well as efforts to encourage continuing education in this area (34,63,64). Ultimately, a truly complementary model of health care will involve active collaboration of patients, conventional medical care providers and CAM providers (44).

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