

Underreporting of Complementary and Alternative Medicine Use Among Arthritis Patients in an Orthopedic Clinic

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Abstract

Underreporting of complementary and alternative medicine (CAM) use can negatively affect patient care. The degree of such underreporting in a clinical orthopedic setting was assessed in a cross-sectional study of 50 patients with osteoarthritis by administering a standard medical history and then a specific CAM-use questionnaire.

Of these patients, 70% were using CAM, and 64% underreported CAM use on the standard medical history. The difference in CAM-use reporting between the 2 surveys was significant ($P = .027$). Mean individual CAM use was 1.53 times higher on the specific questionnaire than on the standard medical history. Study results demonstrate the prevalence of CAM use among orthopedic patients and significant increases in CAM reporting on the specific questionnaire.

Complementary and alternative medicine (CAM) use is highly prevalent in the United States. A recent large survey found that 72 million US adults, or 35% of the total adult population, were using CAM in some form.¹ However, it is estimated that as many as 40% of CAM users do not report this use to their medical doctors.² Medical providers face many new challenges as a result of widespread use of CAM.

CAM therapy has many forms, including herbal, nutritional, and megavitamin supplementation; physical manipulations, such as massage and chiropractic; aromatherapy; self-help organizations; folk remedies; energy healing; and hypnosis.

Most patients use CAM in conjunction with conventional medicine, not as a replacement for it. This

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Am J Orthop. 2011;40(5):E92-E95. Copyright Quadrant HealthCom Inc. 2011. All rights reserved.

COMPLEMENTARY ALTERNATIVE MEDICINE USE SURVEY

Thank you for taking the time to participate in our research. The following survey will take approximately 3 minutes of your time. Your honest input is appreciated.

Please indicate any/all alternative medicine or complementary medications taken for medicinal purposes, or any other medication you have taken without prescription within the past 3 months:

Type	Examples	Currently Using	Have Used in the Past 3 months	
Herbs Taken Orally	Angelica sinensis/DonQuai			
	Boldo/Boldo-fenugreek			
	Boron			
	Boswellia			
	Bromelain (pineapple extract)			
	Cat's Claw			
	Cayenne Cherry Extract			
	Chinese Herbs			
	Chinese Wolfberry/Lycium barbarum			
	Chondroitin Sulfate			
	CMO			
	Collagen			
	Copper			
	Curcumin			
	Danshen			
	Devil's Claw/Harpagophytum procumbens			
	DHEA			
	DMSO			
	Eleuthero			
	Echinacea			
	Essence of Tortoise Shell/Quilnggao			
	Evening primrose/Oenothera biennis			
	Fever Few			
	Flaxseed			
	Garlic			
	Ginger			
	Gingko biloba			
	Ginseng			
	GLA			
	Glucosamine			
	Others	Guaiifensin		
		Kava Kava		
		Magnesium		
		GuaiifensinMSM		
		PC-SPES		
		SAM-E		
		Selenium		
		Stinging Needle		
		St. John's Wort/Hypericum perforatum		
		Turmeric		
Valerian				
Wild Yam				
Zinc Sulfate				
Dietary Approaches		Avacado		
		Cranberry/Vaccinium macrocarpon		
	Gin Soaked Raisins			
	Grapefruit juice/Citrus paradisi			
	Green Tea/Cemellia sinensis			
	Mango/ Mangifera indica			
	Papaya Extract			
	Soy milk/Soy Bean Oil			
Others	Sushi containing seaweed			
	Aloe			
Others	Avurvedic Remedies			
	Fish Oil			
	Vitamins	Please List:		
Others	Other Non-prescription medications	Please List:		

Please Circle All Which Apply:

1) Age	20-35 years 36-45 years 46-50 years 51-55 years 56-60 years 61-65 years 65-75 years 75+ years	5) Annual Household Income	Less than \$25,000 \$25,000 - \$50,000 \$50,000 + Unknown
2) Gender	Male Female	6) Frequency of any/all doctor visits (times per year)	0-1 1-2 3-5 5+ Unknown
3) Race	Caucasian African American Hispanic Asian Other	7) Duration of the Disease/Condition for which River Valley Orthopaedics is seeing you:	0-3 months 3 + Month - 1 year 1 + years
4) Level of Completed Education	Primary School Secondary School High School Degree	8) Do you suffer from osteoarthritic pain ("joint pain") that you are being treated for:	Yes No Unknown

Figure. Survey of use of complementary and alternative medicine.

Table I. Supplements listed on the CAM use questionnaire

Supplements	Supplements (continued)	Dietary Approaches	Others
Angelica sinensis/DonQuai	Ginseng	Avacado	Aloe
Boldo/Boldo-fenugreek	GLA	Cranberry/Vaccinium macrocapon	Ayurvedic Remedies
Boron	Glucosamine	Gin Soaked Raisins	Fish Oil
Boswellia	Guafensin	Grapefruit juice/Citrus pradisi	Vitamins
Bromelian (pineapple extract)	Kava Kava	Green Tea/Cemellia sinensis	Other Nonprescription medications
Cat's Claw	Magnesium	Mango/ Mangifera indica	
Cayenne Cherry Extract	MSM	Papaya Extract	
Chinese Herbs	PC-SPES	Soy milk/Soy Bean Oil	
Chinese Wolfberry/Lycium barbarum	SAM-E	Sushi containing seaweed	
Chondroitin Sulfate	Selenium		
CMO	Stinging Needle		
Collagen	St. John's Wort/ Hypericum perforatum		
Copper	Turmeric		
Curcumin	Valerian		
Danshen	Wild Yam		
Devil's Claw/Harpagophytum procumbens	Zinc Sulfate		
DHEA			
DMSO			
Eleuthro			
Echinacea			
Essence of Tortoise Shell/Quilinggao			
Evening primrose/Oenothera biennis			
Fever Few			
Flaxseed			
Garlic			
Ginger			
Gingko biloba			

Abbreviation: CAM, complementary and alternative medicine.

Table II. Participant characteristics

Characteristic	Percent	Characteristic	Percent
Age, y (n=47)		Income (n=47)	
36-45	14.9	< 25K	15.9
46-55	21.3	25-50K	22.7
56-65	29.8	>50K	54.6
66-75	27.7	Other	6.8
75+	6.3		
Ethnicity (n=46)		Annual Doctor Visits (n=46)	
Caucasian	91.3	0-1	17.4
Black	6.5	1-2	45.7
Hispanic	2.2	3-5	26.1
		>5	10.9
Education (n=47)		Duration of Current Condition (n=45)	
Secondary School	6.4	0-3 m	37.8
High School	31.9	3m-1y	22.2
Degree	61.7	>1y	40.0

situation poses the potentially dangerous possibility of interaction between therapies. Many patients who have osteoarthritis and present to orthopedic specialists are prescribed anti-inflammatories, anticoagulants, and antibiotics, each of which could have unwanted side effects. Use of CAM, particularly herbal, nutritional, and megavitamin supplementation, could exacerbate these side effects or act synergistically to produce them.³ Some supplements, such as garlic, ginger, ginkgo biloba, ginseng, and vitamin E, can interfere with blood clotting and may cause bleeding, particularly in patients who recently underwent surgery.³ Other supplements could pharmacodynamically interact with conventional medicines by potentiating cytochrome

P450 enzymes, such as St. John's wort.³ Thus, it is important for clinicians to accurately monitor CAM use among their patients and to understand potential interactions with currently prescribed medications to prevent complications.

In this article, we describe the results of a cross-sectional study of the degree of underreporting of CAM use among patients with osteoarthritis in an orthopedic clinic. CAM use was assessed by means of a standard medical history and a specific CAM-use questionnaire.

MATERIALS AND METHODS

Fifty patients enrolled in this cross-sectional study. At a routine private orthopedic practice appointment, patients

Table III. Frequency of use of individual supplements

No. of participants	Supplement
21	Chondroitin
17	Fish Oil
16	Vitamin
4	Ginkgo Biloba
4	Ginger
3	St. John's Wort
3	SAM-E
3	Cherry Extract
2	Echinacea
2	Flaxseed
1	MSM
1	Magnesium
1	Turmeric
1	Zinc sulfate
1	Feverfew

were asked to complete 2 survey tools—a standard medical history and then a specific CAM-use questionnaire (Figure). Upon completion, both surveys were decoded with respect to name and other identifiers, and assigned a unique identifying number for analysis in this study.

Inclusion criteria were age between 35 and 75 years and history of upper or lower extremity pain in the hip, knee, ankle, foot, shoulder, elbow, wrist, or hand consistent with the diagnosis of osteoarthritis per a medical practitioner. Patients who did not speak English or did not complete both surveys were excluded. All patients gave written informed consent before participating in the study, which was reviewed and approved by the institutional review board of Grand Valley State University, Grand Rapids, Michigan.

The medical history form, representing a standard inquiry on medication use, instructed patients to “list all current medications or vitamins used.” The specific CAM-use questionnaire collected demographic data and information on specific types of CAM being used now or used within the preceding 3 months. The survey was based, in part, on previously validated surveys.^{4,5} CAM use was elicited from patients by means of a checklist provided in the survey. Table I lists the supplements on the CAM-use questionnaire. For this research, we limited our definition of CAM to oral supplements that are commonly used, those that have the potential for interacting with medications commonly prescribed to orthopedic patients, and those specifically marketed to patients with osteoarthritis, such as chondroitin, SAM-E, glucosamine, devil’s claw, methylsulfonylmethane, ginger, and turmeric. The CAM-use questionnaire included a subset of a complete list published by the Arthritis Foundation.⁶ Each vitamin-use response was evaluated and categorized as normal supplementation (that is, multivitamin) or megavitamin supplementation, which was defined as vitamin supplementation in excess of the current recommended daily allowance (1000 IU vitamin E). Only megavitamin use was included in the CAM supplementation definition.

Patient demographics were analyzed with summary statistics. CAM-use data were analyzed with summary statistics, paired *t* test, and independent *t* test (SPSS version 14; SPSS, Chicago, Illinois).

RESULTS

All patients who enrolled in the study completed it. They were stratified by age, sex, race, education level, annual household income, frequency of doctor visits per year, and duration of current problem report. Patient characteristics are listed in Table II. Of the 50 patients, 55% were female. Age ranged from 40 to 75 years.

On the specific CAM-use questionnaire, 35 patients (70%) reported CAM use based on our definition of CAM. Table III lists individual supplement use frequency. The most commonly used supplement was glucosamine ($n = 21$; 42%), followed by fish oil ($n = 17$; 34%) and megavitamin supplementation ($n = 16$; 32%).

There was significantly ($P = .027$) more CAM use reported on the CAM-use questionnaire compared with the standard medical history. Mean individual CAM use was 1.53 times higher on the specific questionnaire than on the standard medical history.

Thirty-two patients (64%) underreported CAM use on the standard medical history. Nine (26%) of the CAM users accurately reported their CAM use on both surveys. Further, 11 (31%) of the CAM users reported no CAM use on the standard medical history form but nonetheless reported CAM use on the specific questionnaire. There was no significant difference in CAM reporting between men and women ($P = .541$).

DISCUSSION

Our study results show that significantly more arthritis patients in an orthopedic clinic reported CAM use on a specific questionnaire than on a standard medical history. The mean difference per patient between the 2 reporting methods was 1.53. Thus, specifically prompting patients for CAM use by means of a specific checklist leads to more reporting. This suggests that health care providers can get a better, more accurate account of patients’ CAM use by using such a tool to elicit this information.

Seventy percent of patients reported CAM use on the specific CAM-use questionnaire. This result is consistent with the results from a study of arthritis patients (including those with osteoarthritis, rheumatoid arthritis, and fibromyalgia) being treated by primary care physicians. Of these patients, 69.2% were using CAM.⁴

Sixty-four percent of patients underreported CAM use on the standard medical history. In contrast, a large survey of the US general population found an underreporting rate of approximately 39%.² This discrepancy may reflect the health status of our patients, all of whom were experiencing arthritis-related symptoms, or may result from a sampling error due to the small sample size. In spite of the difference in underreporting, however, both studies demonstrated the scope of

the problem—that many patients who use CAM do not report this use to their physicians, which may reflect common attitudes toward CAM, particularly herbal medicines and vitamins, as “natural” and without side effects.

Lack of reporting of CAM use can negatively affect patient care. In particular, CAM may interact with conventional medicines, leading to negative effects or worsening of side effects. In orthopedic medicine, many patients are prescribed anticoagulants (often perioperatively), nonsteroidal anti-inflammatory drugs (NSAIDs), and antibiotics. Because of the potential for negative side effects before, during, and after surgery, surgeons routinely advise patients to discontinue CAM use 2 weeks before surgery.³ Many herbal supplements, such as ginkgo biloba, ginseng, feverfew, garlic, vitamin E (high doses), fish oil (high doses), St. John’s wort, and devil’s claw,^{3,7-9} interfere with the clotting cascade and can interact with conventional anticoagulants and cause bleeding. Kava kava and valerian can interact with anesthesia to potentiate or prolong it.^{3,10} Many NSAIDs commonly produce gastrointestinal symptoms. However, herbal supplements, such as St. John’s wort, saw palmetto, and garlic, also are commonly associated with gastrointestinal symptoms and could exacerbate symptoms caused by NSAIDs.⁸ Other supplements, such as feverfew, can reduce the effectiveness of NSAIDs by inhibiting prostaglandins.⁸ Finally, long-term echinacea supplementation could lead to opportunistic infections or poor wound healing through immunosuppression.³

Although this study used a small sample, there was a significant difference between the 2 survey methods, which underscores the size of the problem and the need for physicians to routinely assess CAM use among their

patients. Our results suggest that regular use of a specific tool to elicit CAM use in patients would lead to more accuracy and communication on this use.

AUTHORS’ DISCLOSURE STATEMENT AND ACKNOWLEDGMENTS

The authors report no actual or potential conflict of interest in relation to this article.

The authors thank Sango Otieno, PhD, for statistical assistance and Charles Dubose, MD, and Wally Boeve, EdD, for assistance in advising the physician assistant students.

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