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Frequency of Use of Complementary and Alternative Medicine in Women with Breast Cancer

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Frequency of Use of Complementary and Alternative Medicine in Women With Breast Cancer

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Purpose/Objectives: To estimate the frequency of use of complementary and alternative medicine (CAM) therapies among women diagnosed with breast cancer and to identify demographic and clinical factors associated with CAM use in these patients.

Design: A descriptive, cross-sectional survey.

Sample: A convenience sample of 105 predominantly Caucasian women ($\bar{x}$ age = 59 years) with a diagnosis of breast cancer was recruited from the Tampa Bay area and a rural midwestern area.

Methods: Using the "Use of Complementary Therapies Survey," frequency of CAM use was calculated for 33 individual therapies listed on the survey and among three survey-defined subscales of CAM therapies (i.e., diet and nutritional supplements, stress-reducing techniques, and traditional and ethnic medicines).

Main Research Variables: (Au from RM: Please provide.)

Findings: Among diet and nutritional supplements, 64% of all participants reported regular use of vitamins and minerals and 33% regularly used antioxidants, herbs, and health foods. Among stress-reducing techniques, 49% of all participants regularly used prayer and spiritual healing, followed by support groups (37%) and humor or laughter therapy (21%). Traditional and ethnic medicine therapies rarely were used with the exception of massage, which was used at least once after diagnosis by 27% of all participants. More frequent CAM use was observed among study participants who had undergone previous chemotherapy treatment and those with more than a high school education. Also, being less satisfied with their primary physician was associated with patients' more frequent CAM use.

Conclusions: CAM use is increasing among women with breast cancer, and frequency of specific use according to type of CAM is higher than reported from other studies. Use increased in patients who had undergone chemotherapy and in those with a high school education.

Implications for Nursing: Oncology nurses are in a key position to identify what treatments patients are using and implement CAM therapies that can be helpful to relieve patient symptoms related to treatment and psychological distress.

Key Points . . .

➤ Use of complementary and alternative medicine (CAM) therapies is common among women diagnosed with breast cancer.

➤ Use of CAM was associated with patients' use of chemotherapy, higher education, and not being satisfied with their primary physician.

➤ Assessment of use of CAM therapies is an important consideration and may have implications for treatments being administered.

➤ Effective implementation of CAM therapies may positively relieve physical symptoms and psychological distress.

Cassileth, 1998; Ernst, Willoughby, & Weihmayer, 1995). Use of CAM by women with breast cancer is believed to be increasing, but limited research exists on the frequency and predictors of CAM use in this population.

With increasing fears of morbidity and mortality, women with breast cancer may be seeking a variety of CAM treatments (VandeCreek, Rogers, & Lester, 1999). Estimates suggest that breast cancer will account for 31% of all new cancer cases among women in 2002, with approximately 203,500 new cases nationwide and 13,100 in Florida alone (Jemal, Thomas, Murray, & Thun, 2002). Because of the possible physical, emotional, and financial impact of the

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C omplementary and alternative medicine (CAM) is defined as methods used in the diagnosis, treatment, or prevention of disease that complement mainstream medicine, as opposed to alternative therapies, which are used as a direct substitute for mainstream medicine (Ernst &

use of various CAM therapies by this population, estimating the frequency and predictors of CAM use among women with breast cancer is of scientific and public health importance.

Practitioners of conventional medicine have justifiably criticized use of most CAM therapies for the relative lack of peer-reviewed, scientifically conducted analyses. Nevertheless, CAM use by the general public has increased to the extent that medical science should not continue to ignore this increased use and the possible adverse effects that may occur with some CAM use (Hennekens, Buring, & Peto, 1994; Office of Technology Assessment, 1990). Documented CAM use by patients in general is reported to be as high as 45%, yet the role of CAM in patient care has had little scientific support. However, studies at the National Cancer Institute (NCI) and the National Center for Complementary and Alternative Medicine are beginning to have an impact on this scientific evidence (Lerner & Kennedy, 1992; Murray & Rubel, 1992; Risberg, Lund, Wist, Kaasa, & Wilsgaard, 1998; Verhoef, Russell, & Love, 1994). Research suggests that up to 64% of individuals with cancer use CAM in addition to their prescribed cancer treatments (Ernst & Cassileth, 1998).

Literature Review

Use of Complementary and Alternative Medicine in Breast Cancer

Compared to CAM use by patients with cancer as a whole, fewer studies have examined the prevalence or correlates of CAM use among patients with breast cancer. A meta-analysis of studies of CAM used for treatment with breast cancer revealed few well-controlled studies with adequate end-point data (Jacobson, Workman, & Kronenberg, 2000). The 10 studies included in the analysis were grouped according to whether CAM was used to alter disease progression, alleviate symptoms caused by the disease, relieve or prevent treatment side effects, or improve immune function.

Studies conducted outside of the United States: Five of the studies were conducted outside the United States, three in Canada and two in Europe. The first study, conducted in Canada, studied patients with breast cancer (35 used CAM and 17 did not). The most frequent types of CAM used were meditation and relaxation (64%), vitamins or tonic (58%), spiritual and faith healing (54%), herbal remedies (50%), special foods and diets (27%), immune therapies (23%), massage therapy (19%), detoxification (17%), and shark cartilage (8%) (Balneaves, Kristjanson, & Tataryn, 1999).

The second study, with a larger sample, also was conducted in Canada. It examined the prevalence of CAM use by 422 breast cancer survivors and compared characteristics of users of CAM with nonusers (Boon et al., 2000). Users of CAM had greater incomes and were younger, more educated, and more likely being treated with chemotherapy compared to nonusers. Overall, 67% reported using some form of CAM and 16% indicated they currently adhered to a CAM treatment protocol. The top 10 CAM therapies were vitamins and minerals (50%), herbal remedies (25%), green tea (17%), special foods (15%), essiac **[Author: correct word?]** (15%), body work (e.g., Reiki, massage, therapeutic touch) (14%), meditation (10%), shark cartilage (5%), homeopathy (4%), and faith healing (3%). These top therapies were used by 62% of the respondents. CAM was used most often in an attempt to boost the immune system.

The third study was a qualitative study conducted in Canada. It explored the perceptions and experiences related to CAM use in 36 women diagnosed with breast cancer (Boon, Brown, Gavin, Kennard, & Stewart, 1999). Participants identified a wide range of therapies, but the frequency of use was not systematically reported. Barriers to use were identified as cost, access, and time.

The fourth study, completed in Europe, examined CAM use among 242 patients with breast cancer who were receiving conventional treatment (Crocetti et al., 1998). Results showed that after one year, 16% of patients used CAM after diagnosis compared to 9% before diagnosis. The main reason identified for using CAM was physical distress. The most common therapies among this European sample were homeopathy, manual healing, herbals, and acupuncture.

The fifth study conducted in England examined prevalence of CAM use in 714 patients with breast cancer (Rees et al., 2000). Results showed that 22% of patients used various CAM therapies in the prior 12 months; the highest reported use was aromatherapy massage (9%); chiropractic or osteopathy (6%); relaxation, yoga, and meditation (6%); and healing (5%). **[Au from RM: What kind of healing?]**

U.S. studies: Five studies examined prevalence or patterns of use of alternative therapies in women with breast cancer in the United States. Two of the studies examined use CAM use in patients with breast cancer compared with other populations. The first, a longitudinal cohort study of 86 patients with breast cancer from the San Francisco area reported that 72% of these women were using at least one form of CAM (Adler & Fosket, 1999). However, CAM use was not dependent on the diagnosis of breast cancer because 69% of the participants reported using at least one CAM therapy before diagnosis. CAM use appeared to be age-related because 78% of young women reported using CAM before diagnosis, compared to 58% of older women. Six months later **[Au from RM: later than what? Do you mean postdiagnosis?]**, 65% of the women were using some form of CAM. A limitation of this study was that it did not report the specific types of CAM therapies that the women used.

The second study conducted in the United States examined types and prevalence of use of conventional and CAM therapies by women with early-stage breast cancer in four ethnic groups (N = 379) (Lee, Lin, Wrensch, Adler, & Eisenberg, 2000). The most commonly reported CAM therapies were dietary therapies (27%), spiritual healing (24%), herbal remedies (13%), physical methods (14%), and psychological methods (9%). Use ranged from 21%–36%, with ethnic differences in types of CAM used. African Americans most often reported use of spiritual healing (36%), Chinese subjects used herbal remedies (22%), Latinas used dietary therapies (30%) and spiritual healing (26%), and Caucasians reported using more dietary methods (35%) and physical methods (e.g., acupuncture, massage) (21%). This was the first study examining prevalence of use by ethnicity.

A third, statewide study **[Author: please identify state]** of 480 women examined retrospectively types of CAM therapies used in patients with newly diagnosed breast cancer (Burstein, Gelber, Guadagnoli, & Weeks, 1999). Unlike the San Francisco study, only 11% of this sample reported using CAM prior to their breast cancer diagnosis. After breast

surgery, 29% began to use CAM. Findings indicated that use of psychological therapies (e.g., relaxation, self help, spiritual healing, imagery, biofeedback, hypnosis) decreased following surgery (29% compared to 22%). Use of healing therapies (e.g., megavitamins, herbal medicine, massage, chiropractic, macrobiotic, acupuncture, energy healing, homeopathy, folk remedies) also decreased following surgery (28% compared to 19% after surgery). Other interesting data from this study indicated that three months after surgery, CAM use was associated with depression, fear of recurrence of cancer, lower scores for mental health, and more physical symptoms. The authors concluded that CAM use should alert healthcare providers to the possibility of unrelieved physical symptoms and accompanying symptoms of depression.

Use of CAM compared to other populations: The fourth and fifth studies conducted in the United States reported on CAM use in people with breast cancer compared to other populations. In a study comparing the CAM use in patients with breast cancer to use in the general population, VandeCreek et al. (1999) reported that the therapies most frequently used by patients with breast cancer were prayer (76%), exercise (38%), spiritual healing (29%), and megavitamins (23%). In comparison to a general population sample, patients with breast cancer were using a wider range of alternative therapies. The researchers concluded that the morbidity and mortality associated with breast cancer motivated this increased use.

The last study compared CAM use in people with breast cancer with people who had other types of cancers. The authors reported that CAM use among patients with breast cancer was high (84%; n = 117) compared to those with other malignancies (66%; n = 132) (Morris, Johnson, Homer, & Walts, 2000). In addition, people with breast cancer were far more likely to be consistent users compared with those with other tumor sites. The most frequently used therapies for patients with breast cancer were nutrition (65%), massage (57%), herbs (49%), relaxation (41%), chiropractic (43%), and acupuncture (31%).

Although CAM therapies were examined in the previously mentioned studies in women with breast cancer, specific therapies were systematically specified. Many of the studies identified that users of CAM were younger, more educated, and had previously used CAM. The most commonly used therapies by women with breast cancer were nutrition and herbs, prayer and spiritual healing, acupuncture, and relaxation. The most commonly reported reasons for use were to relieve psychological (e.g., depression or anxiety) and physical (e.g., pain) distress and to boost the immune system. Psychological distress, physical distress, and fear of recurrence appear to be related to increased CAM use. A limitation of many of the studies is that they required participants to retrospectively recall of CAM therapies used over several years. Although these 10 studies examined patterns and frequency of CAM use in patients with breast cancer in North America and Europe, a shortage of reliable information exists about the specific types of therapies being used. In addition, little data exist regarding which demographic and clinical factors are associated with CAM therapy use in patients with breast cancer. Therefore, the purpose of the current study was to estimate the frequency of use and describe specific types of CAM therapies used among women diagnosed with breast cancer and to identify demographic and clinical factors associated with CAM use in these patients.

Methods

Study Sample and Design

A descriptive, cross-sectional survey was used to determine the frequency of CAM use in women with breast cancer. Subjects were recruited from midwestern community groups and breast cancer clinics at H. Lee Moffitt Cancer Center and Research Institute in Tampa, FL, and from community groups in Tampa. RNs recruited participants and explained the study to them. Subjects could complete the survey on site or to return it by mail. The survey was anonymous and the principal investigators maintained data in a locked file. The only inclusion criteria were a diagnosis of breast cancer and the ability to read English.

Instrument

The "Use of Complementary Therapies Survey" was based on an original study completed using the Complementary Therapy Rating Scale (CTRS) (Bennett & Lengacher, 1999). The original CTRS was modified by adding items based on the classifications of complementary therapies identified by the Office of Alternative Medicine (OAM). According to OAM, alternative medical practices can be grouped loosely into six basic categories: diet and nutritional lifestyle changes, herbal medicine, bioelectromagnetic applications, manual healing, mind-body control, and pharmacologic and biologic treatments. Content validity of the CTRS first was determined by a content validity index (CVI) and found to be 0.89. Thirty-two items had a CVI of 1.0, and six items had a CVI of 0.33. The six items with a CVI of 0.33 were deleted from the final survey. One item, aromatherapy, was added at the recommendation of reviewers. Based on the review of the content areas, the items were grouped into three major subscales: diet and nutritional supplements, stress-reducing therapies, and traditional and ethnic medicines. Use of each CAM therapy from the complete survey was rated using a four-point Likert scale with points distributed as follows: 1 = never, 2 = once, 3 = several times, and 4 = regular basis. The survey contained a total of 33 items, and the possible range of points on the piloted inventory could vary from 33–132.

Reliability was determined using coefficient alpha. For the entire survey, the alpha was 0.86. For the individual subscales, alphas were 0.67 for the 6 items in the diet and nutritional supplements subscale, 0.79 for the 11 items in the stress-reducing techniques subscale, and 0.80 for the 16 items in the traditional and ethnic medicines subscale.

In addition to information concerning frequency of CAM use, a second part was added to the survey to gain information on usefulness of individual therapies and if the women had discussed the therapies with their healthcare providers. Patient demographics (i.e., age, ethnicity, education, employment status, marital status, religion, income, reported clinical treatments, and family history of breast cancer) also were collected.

Data Analysis

Frequency of use was calculated for each individual CAM therapy, as well as for the three survey-defined subscales of

CAM therapies. Logistic regression analysis was used to estimate the relative odds of regular use or any use (with yes or no answers) of the three types of CAM therapies in relation to baseline demographic and clinical characteristics. Full models were fit that included a set of nine baseline demographic and clinical characteristics. In addition, ordinary least squares regression models were fit to identify independent predictors of CAM therapy use. The three dependent variables were the proportion of participants who used diet and nutritional supplements, stress-reducing techniques, or traditional and ethnic medicine following breast cancer diagnosis. Predictors were selected by stepwise regression using entry and retainment p values of 0.1.**[Author from RM: Why did you not use the standard value of 0.05?]** All analyses were performed with the SAS® System, version 8.0 (SAS Institute, Cary, NC).

Results

Study Participants

Analysis of the sociodemographic characteristics revealed that 105 of the 125 women who were asked to participate completed the surveys, for an 86% response rate. Demographic and clinical history characteristics of the study population are presented in Table 1. The mean age was 59. Most participants (95%) were Caucasian and 4% were African American, with 1% unknown. The participants were very educated, with only 3% having less than a high school education, 25% having graduated from high school, and 72% having some college education. Most of the subjects lived in an urban or suburban area (61%), with 39% living in a small town or rural area. Employment status demonstrated that 44% worked either part-time or full-time and 39% were retired. Annual household income was high, with 30% in the $25,000–$50,000 range and 55% in the $50,000 to more than $100,000 range. Self-reported clinical data on type of cancer indicated 57% had ductal carcinoma, with 17% lobular; 54% reported they had previously received chemotherapy and 10% were currently receiving chemotherapy; 52% reported having received radiation previously; and 5% currently were being treated with radiation.

Frequency of Use of Complementary and Alternative Medicine Therapies

About two-thirds of all participants reported using vitamins and minerals on a regular basis, whereas antioxidants were used less regularly by a third of all participants (see Table 2). Herbs, health foods, and special diets were used infrequently. Among participants who reported using diet and nutritional supplements since being diagnosed with breast cancer, the majority indicated that they had discussed this use with their doctor. Half or more **[Author: Do you mean "more than half" or "at least half"?]** of all participants who reported using diet and nutritional supplements since being diagnosed indicated they had not used these therapies prior to diagnosis.

Overall, stress-reducing techniques were used less frequently than diet and nutritional supplements, although two-thirds of all participants reported using at least one stress-reducing technique on a regular basis. Prayer and spiritual healing was the most common stress-reduction technique used regularly (49%), followed by support groups (37%) and humor or laughter therapy (21%). Unlike the use of diet and

Table 1. Demographic and Clinical History Characteristics of Study Population

Characteristic	n	%
Age (years)		
X(SD) = 59(12)	–	–
Ethnicity		
Caucasian	98	95
African American	4	4
Other	1	1
Years of education		
Less than high school	3	3
High school	25	25
Some college	27	27
Bachelor's degree	28	28
Master's degree	12	12
Doctoral degree or other advanced degree	5	5
Area of residence		
Urban	19	18
Suburban	44	43
Small town	31	30
Rural	9	9
Work status		
Employed full-time	33	32
Employed part-time	13	12
Unemployed	10	10
Retired	41	39
Disabled	2	2
Other	5	5
Annual household income		
< $25,000	14	15
$25,000–$50,000	28	30
> $50,000–$75,000	26	28
> $75,000–$100,000	16	16
> $100,000	11	11
Family history of cancer	44	42
Type of breast cancer		
Ductal	49	57
Lobular	15	17
Unknown	22	26
Type of treatment		
Surgery previously received	104	99
Chemotherapy previously received	57	54
Chemotherapy currently being received	10	10
Radiation previously received	55	52
Radiation currently being received	5	5
Other medical treatment previously received	20	19
Other medical treatment currently being received	15	14

N = 105

(Author: When added, the numbers in the n column do not total the N value you have given (105). However, for all categories except "Family history of cancer" and the items under "Type of treatment," the percentages total 100. How can this be if the total sample is not represented? If all numbers are correct, please provide wording to be used as a footnote to explain why this is so.)

Table 2. Use of Complementary and Alternative Medicine (CAM) Therapies

CAM Therapies[a]	Use Since Breast Cancer Diagnosis				Discussed Use With Doctor		Used Treatment Before Diagnosis	
	At least once		Regularly					
	n	%	n	%	n[b]	%	n[b]	%
Diet and nutritional supplements								
Special diets (e.g., macrobiotic)	14	13	10	10	9	69	4	33
Vitamins and minerals (e.g., selenium)	77	73	67	64	53	83	35	53
Cleansing or detoxification regimens	2	2	1	1	–	–	–	–
Health foods (e.g., barley grass)	15	15	10	10	8	67	2	14
Herbs (e.g., ginkgo biloba)	20	20	14	13	11	69	6	35
Antioxidants	41	39	35	33	29	81	17	49
At least one of the six listed above	81	77	71	68	–	–	–	–
Percent of therapies used since diagnosis $\overline{X}$ (SD) = 27(23)								

(Author from RM: Pkease ckarify—is this percent of patients using therapies or percent of therapies used?)

CAM Therapies[a]	At least once n	%	Regularly n	%	Discussed n[b]	%	Before n[b]	%
Stress-reducing techniques								
Art therapy	13	12	3	3	3	30	7	64
Relaxation techniques	43	41	16	15	21	64	17	46
Music therapy	31	30	12	11	5	24	19	73
Humor or laughter therapy	45	43	22	21	12	36	29	76
Guided imagery	27	26	6	6	7	37	6	23
Counseling	20	19	4	4	14	82	9	53
Support group	53	51	38	37	37	86	6	15
Prayer and spiritual healing	62	59	51	49	20	43	53	98
Biofeedback	3	3	2	2	–	–	–	–
Hypnosis	1	1	–	–	–	–	–	–
Yoga and meditation	19	18	6	6	7	50	5	36
At least 1 of the 11 listed above	82	78	69	66	–	–	–	–
Percent of therapies used since diagnosis $\overline{X}$ (SD) = 27(42)								
Traditional and ethnic medicines								
Acupuncture	2	2	–	–	–	–	–	–
Homeopathic remedies	2	2	1	1	–	–	–	–
Ethnic medicines (e.g., Chinese)	3	3	1	1	–	–	–	–
Acupressure	2	2	1	1	–	–	–	–
Massage	28	27	6	6	8	32	11	48
Chiropractic	11	10	2	2	2	29	6	75
Reflexology	6	6	2	2	–	–	5	100
Therapeutic touch	7	7	2	2	2	40	2	33
Aromatherapy	11	10	–	–	1	11	4	67
Ozone or hydrogen peroxide therapy	1	1	–	–	–	–	–	–
Metabolic therapy	1	1	–	–	–	–	–	–
Chelation therapy	1	1	–	–	–	–	–	–
Naturopathy	3	3	1	1	–	–	–	–
Magnetic therapy	4	4	1	1	–	–	–	–
Electro-stimulation	5	5	–	–	–	–	–	–
Colored light treatments	–	–	–	–	–	–	–	–
At least 1 of the 16 listed above	39	37	12	11	–	–	–	–
Percent of therapies used since diagnosis $\overline{X}$ (SD) = 6(10)								

[a] Missing cases exist for some variables. **(Author: n totals do not equal the N in this table, either. Can I add to this footnote wording that indicates that patients could be using more than one type of CAM therapy?)**

[b] Data in the columns regarding discussion of CAM use with doctor and CAM use before diagnosis are restricted to CAM therapies with at least five respondents who reported usage following diagnosis of breast cancer.

nutritional supplements, most users of several stress-reducing techniques (e.g., art therapy, music therapy, humor or laughter therapy, guide imagery, prayer and spiritual healing) did not discuss this use with their doctor. A large percentage of users of stress-reducing techniques had prior experience with these therapies before diagnosis, whereas users of support groups and guided imagery rarely had experience with these stress-reducing techniques prior to breast cancer diagnosis.

The 16 CAM therapies classified as traditional and ethnic medicines rarely were used by study participants with the exception of massage, which was used at least once after diagnosis by 27% of all participants. Similar to the use of stress-reduction techniques, most users of traditional and ethnic medicines did not discuss this use with their doctor.

Table 3. Logistic Regression Analysis of Predictors of Use of CAM Therapies

Predictor of Use	Model 1 Regular Use of Diet and Nutritional Supplements		Model 2 Regular Use of Stress-Reducing Techniques		Model 3 Any Use of Traditional and Ethnic Medicines	
	OR	95% CI	OR	95% CI	OR	95% CI
Age (per five years)	1.10	0.85, 1.42	1.12	0.87, 1.45	1.14	0.88, 1.48
At least some college (versus high school or less)	1.83	0.59, 5.72	1.96	0.61, 6.28	2.77*	0.84, 9.14
Urban or suburban residence (versus rural or small town)	1.04	0.39, 2.78	0.36*	0.13, 1.01	1.91	0.69, 5.27
Employed full or part-time	0.57	0.19, 1.69	0.49	0.16, 1.46	1.20	0.40, 3.60
Family history of cancer	1.73	0.64, 4.66	1.00	0.38, 2.63	0.42*	0.15, 1.14
Very satisfied or completely satisfied with primary physician	0.55	0.19, 1.59	0.63	0.21, 1.83	0.73	0.26, 2.06
Chemotherapy previously received	2.53*	0.86, 7.44	2.50*	0.86, 7.34	2.88*	0.97, 8.57
Radiation previously received	1.20	0.47, 3.06	1.58	0.61, 4.12	1.25	0.49, 3.20
Other medical treatment previously received	1.15	0.36, 3.67	1.84	0.54, 6.27	1.37	0.46, 4.08

N = 93

* p < 0.10. OR—odds ratio; CI—confidence interval **(Author from RM: Please explain why p < 0.1 was used instead of 0.05; also, why is there a distinction of some items that are < 0.1? Please explain here and in the text.)**

Predictors of Use of Complementary and Alternative Medicine Therapies

Table 3 lists predictors of CAM use in the form of odds ratios. No demographic or clinical factor was associated with CAM use below the conventional p value of 0.05. The most consistent evidence suggestive of an association was for previous chemotherapy treatment. The estimated odds of regular use of diet and nutritional supplements and stress-reducing techniques were approximately 2.5 times higher among participants who previously had received chemotherapy compared to those who had not. A similar result was observed for use of traditional and ethnic medicines. In addition, having more than a high school education consistently was suggested as increasing the likelihood of using CAM.

When the three subscales of CAM therapies were modeled as a continuous variable (i.e., percent of therapies used), having more than a high school education and previously receiving chemotherapy were associated with more frequent use of diet and nutritional supplements and stress-reducing techniques (see Table 4). In addition, a trend (not significant) occurred in that participants who were very satisfied or completely satisfied with their primary physician were less likely to use stress-reducing techniques. Finally, when considering the percent use of all 33 CAM therapies, having more than a high school education and previous receipt of chemotherapy

Table 4. Least Squares Regression Analysis of Predictors of Use of CAM Therapies

Predictor of Use (Author: The columns below these subheads are not percents, so "percent" should not be used in the subhead. Can we shorten these subheads to key words (i.e., "Diet and Nutritional Supplements") only?)	Model 1 (N = 100) Percent Use of the Six Listed Diet and Nutritional Supplements		Model 2 (N = 98) Percent Use of the 11 Listed Stress-Reducing Techniques		Model 3 (N = 98) Percent Use of All 33 Listed CAM Therapies	
	ß	t	ß	t	ß	t
Age (per year)	–	–	–	–	–	–
At least some college (versus high school or less)	9.34	1.88	19.20***	3.80	8.60**	2.86
Urban or suburban residence (versus rural or small town)	–	–	–	–	–	–
Employed full or part-time	–	–	–	–	–	–
Family history of cancer	–	–	–	–	–	–
Very satisfied or completely satisfied with primary physician	–	–	–12.16*	–2.56	–4.90	–1.75
Chemotherapy previously received	9.41*	2.10	7.44	1.70	5.75*	2.21
Radiation previously received	–	–	–	–	4.41	1.70
Other medical treatment previously received	–	–	–	–	–	–

*p < 0.05; **p < 0.01; *** p < 0.001
ß—Beta-coefficient from regression model
(Author: The "Did not enter model item"—does this mean that these aspects did not predict use of CAM or that no statistics were performed on these variables?)

or radiation were associated with higher CAM use and high satisfaction with one's primary physician was associated with less frequent use.

Discussion

In this study of 105 female patients who had undergone breast cancer surgery, CAM use was frequent. In general, mainstream CAM therapies, such as vitamins and mineral supplementation as well as prayer and spiritual healing, were used most frequently. Still, a substantial percentage of participants used less conventional stress-reduction techniques as well as antioxidant supplementation. This study's participants used more diet and nutritional supplements (63%), compared to Boon et al. (2000), who reported 50% used vitamins and minerals; Lee et al. (2000), who reported 27% use of dietary therapies in ethnic groups; Bennett and Lengacher (1999), who reported 28% vitamin use in rural patients with cancer; and VandeCreek et al. (1999), who reported use of megavitamins for 23% of their participants. The use of stress-reducing CAM therapies was consistent with other studies. In this study, prayer was used most (49%); however, it was used less than reported by VandeCreek et al., who found that 76% of women with breast cancer used prayer. Bennett and Lengacher found that 60% used prayer, and Balneaves et al. (1999) found that 54% used spiritual and faith healing. CAM use appears to vary across reported studies, and differences in use could be related to reporting of the specific category, which is different for all studies. The data indicated that patients with breast cancer commonly use some CAM therapies; however, a consistent survey tool for all studies that measures specific CAM therapies is not available. Thus, the weight of available evidence currently suggests that patients with breast cancer routinely use CAM, but small study samples and the use of different survey instrumentation undoubtedly contribute to the substantial variation in prevalence estimates across studies.

Clinical Implications of Findings

A large percentage of CAM therapy users did not discuss CAM use with their physicians. This was true particularly for stress-reducing techniques (e.g., art therapy, music therapy, guided imagery) and traditional and ethnic medicines (e.g., aromatherapy, massage), although relatively more women were willing to discuss the use of diet and nutritional supplements with their healthcare providers. This lack of disclosure is similar to findings by Adler and Fosket (1999) who learned that only 54% of women with breast cancer who were treated by alternative practitioners disclosed this practice to their physicians. Conversely, 94% disclosed details of their biomedical treatments with their CAM practitioners.

Patients with breast cancer generally may perceive stress-reduction and physical manipulation techniques as either being less harmful or unaccepted as verified treatments by healthcare providers; therefore, they do not share that they are engaged in these therapies. Therapies that involve the consumption of supplements could be perceived as affecting current conventional treatments, and this heightened perception may increase communication with physicians related to use of these supplements. Although this potentially enhanced awareness and communication is encouraging, the current study's data also suggest that patient-to-physician communications concerning ongoing CAM use have considerable room for improvement. If patients are not always forthcoming concerning CAM use, healthcare providers need to develop techniques to introduce discussion of CAM use and encourage this communication as part of the routine assessment process.

A second important finding of this study was that women's education level and chemotherapy treatments seem to be associated with CAM use. Women with more than a high school education appear to be more frequent users of CAM therapies. This finding is consistent to those of Astin (1998), Boon et al. (2000), and Sparber et al. (2000), who found that women with high educational backgrounds were more frequent users of CAM, tended to be younger, and reported that CAM use was more congruent with their philosophy of life (Astin). Logically, women who are more educated may be more informed, on average, of the potential benefits of CAM therapies, as well as equipped with greater financial resources to seek out CAM therapies that involve significant costs.

The current study's finding that prior receipt of chemotherapy and, to a lesser extent, radiation appear to be associated with more frequent CAM use may relate to overall disease severity and a concomitant increased perception of susceptibility of illness. Boon et al. (2000) also reported that users of CAM were more likely to have had chemotherapy. The hypothesis of potential increased perceived susceptibility among chemotherapy recipients is consistent with elements of the Health Belief Model of conditions that influence health behavior (Janz & Becker, 1984; Rosenstock, 1974a, 1974b). This potential increased perceived susceptibility may have important clinical implications for patients undergoing chemotherapy, particularly if use of a CAM therapy has beneficial effects or if it adversely affects the efficacy and safety of chemotherapy. Because CAM therapies routinely appear to be used adjunct to other conventional treatments, clinical trials should be conducted in controlled settings to evaluate the effects of various adjunct CAM therapies. Importantly, the widespread CAM use actually may hinder accrual to clinical trials. A more global hindrance is the lack of multidisciplinary infrastructure to conduct investigations because few centers and research teams are experienced in CAM therapies (Tagliaferri, Cohen, & Tripathy, 2001). Currently, the National Institutes of Health is beginning to study effects of CAM therapies on various populations, and NCI is focusing on clinical trials involving people with cancer and use of CAM.

Finally, the current study's data suggest the possibility that higher overall CAM use may be more likely among people who are not highly satisfied with their primary physicians. This apparent trend requires further investigation and is consistent with the work of Boon et al. (1999), who reported that one reason women with breast cancer use CAM is because of bad experiences with conventional medicine. If women had physicians who supported their use of CAM, they looked to them for guidance; however, if women found that CAM use was discouraged or their physicians did not want to know what they were taking, rapport was affected. Some physicians belied it was a waste of money to use CAM. In addition, Boon et al. (2000) found that a significant difference existed in perceived attitudes of CAM practitioners as compared to conventional practitioners. CAM prac-

titioners were viewed to provide more emotional support and listen carefully to what patients were saying. Also, Boon et al. (2000) reported that women with breast cancer who used CAM therapies were less likely to believe that conventional treatments would cure their cancer and that conventional therapies have side effects [**Author: Please confirm—the women were less likely to believe that conventional therapies have side effects?**].

Study Limitations

This study is based on a relatively small sample of 105 women. Thus, the study was underpowered to detect associations of modest size. As a result, the researchers were able to identify only a very limited set of demographic and clinical factors that appear to be associated with CAM use. In addition, the study population was almost entirely Caucasian and did not include many women of low socioeconomic status. Thus, the results presented here may not generalize to many other breast cancer treatment settings. Finally, the instrument used to measure CAM use is still undergoing revision, although it previously has demonstrated adequate reliability.

Conclusions and Implications for Nursing Practice

CAM use is common among women following diagnosis with breast cancer. Variation in education and use of chemotherapy appears to be associated with the relative frequency of CAM use, as well as in patients' communication of this use with their physicians. Use of CAM following diagnosis of breast cancer varied for specific types of CAM, but most women used vitamins and minerals on a regular basis (68%) followed by stress-reducing techniques (66%). Most of the users of diet and nutritional supplements did discuss this use with their providers, indicating that the knowledge of effects and side effects of nutritional supplements would be essential for clinical practice. In contrast, use of stress-reducing techniques was not discussed with providers. This has implications for education and practice in that some of the stress-reducing techniques were used prior to diagnosis, but participation in support groups and guided imagery was new. Further investigation is needed to identify specific correlates and circumstances in which CAM therapies are being sought out and, in particular, if under certain circumstances such use adversely interferes with conventional breast cancer treatment regimens.

If oncology nurses can determine what CAM therapies women are using, then they can further educate patients about which therapies may be useful in relieving patients' symptoms and psychological distress. Oncology nurses have a great opportunity to implement varied CAM therapies that may facilitate conventional treatments. For nurses, this may mean specialized training and education to provide these therapies; however, nurses are in an excellent position to provide education and knowledge related to CAM therapies so patients feel and believe they are receiving a holistic approach to their diagnosis of breast cancer.

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