

Complementary and Alternative Medicine Use Among Women With Breast Cancer: A Systematic Review

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Patients with breast cancer use complementary and alternative medicine (CAM) despite the fact that no studies have shown altered disease progression attributable to CAM use. The purpose of this systematic review is to summarize research as it relates to CAM use among women with breast cancer. Among the many findings of the review, biologically based practices were noted as the types of CAM most used by women with breast cancer, followed by mind-body medicine, whole medical systems, and energy medicine. Sources of information about CAM use for women with breast cancer vary widely, including family, friends, mass media, healthcare providers, CAM providers, and self-help groups. Sociodemographic factors that appear to be related to CAM use were younger age, higher education, higher income, married status, involvement in a support group, and health insurance. The reasons for CAM use reported by women with breast cancer were to help healing, to promote emotional health, and to cure cancer. Oncology nurses should learn more about CAM use among women with breast cancer. Open communication about CAM use helps ensure that safe and holistic care is provided. Additional research in this particular area is needed.

Complementary and alternative medicine (CAM) is widely used in the United States. The 2007 National Health Interview Survey by the National Center for Complementary and Alternative Medicine (NCCAM) and the National Center for Health Statistics showed that 38% of adults in the United States are using some forms of CAM (NCCAM, 2009a). Women with breast cancer are more likely to use CAM compared to other patients with cancer, such as those with colorectal, prostate (Patterson et al., 2002), or gynecologic cancer (Fasching et al., 2007). The rate of CAM use in women with breast cancer has been reported to be as high as 75% (Astin, Reilly, Perkins, & Child, 2006).

Although few studies have been conducted regarding clinical efficacy of CAM and no studies have shown altered disease progression from CAM use, Jacobson, Workman, and Kronenberg (2000) asserted that many women with breast cancer turn to CAM as they suffer from side effects of conventional treatments. This may contribute to issues such as a delay in seeking medical treatment or serious interactions between CAM and conventional treatments when the safety of CAM is unknown (Rakovitch et al., 2005).

Providing information about CAM to women with breast cancer should be the role of healthcare providers. As such, understanding CAM use in women with breast cancer is essential (Boon

At a Glance

- ◆ Women with breast cancer seek complementary and alternative medicine (CAM) more than other patient populations with cancer.
- ◆ About 50% of women with breast cancer disclose CAM use to their healthcare providers.
- ◆ Oncology nurses should obtain detailed information about CAM use by their patients and explore why women with breast cancer do not discuss the use of CAM with healthcare providers.

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Digital Object Identifier: 10.1188/10.CJON.E45-E55

et al., 2000). Research also should be conducted to ascertain what factors motivate CAM use. Knowledge of this could lead to better counseling (Balneaves, Kristjanson, & Tataryn, 1999). Unfortunately, this particular area remains poorly understood (Burstein, Gelber, Guadagnoli, & Weeks, 1999; Owens, 2007; Patterson et al., 2002). The purpose of this literature review is to summarize research as it relates to CAM use among women with breast cancer. The specific questions about women with breast cancer were (a) which types of CAM were reported, (b) what were the sources of information about CAM, (c) what factors contributed to CAM use, and (d) why did women decide to use CAM?

Methods

An electronic search was performed with the CINAHL, PsycINFO®, and PubMed databases. The keywords included *CAM* and *breast cancer, alternative treatment/therapies* and *breast cancer, and complementary and breast cancer*. The inclusion criteria for the review were that the documents were original quantitative research and published in English from January 1990 through October 2009. Qualitative research and literature reviews were excluded. To ensure that studies focused specifically on women with breast cancer, the authors retrieved documents that contained the words *breast cancer patients* or *women with breast cancer* within their titles or abstracts. Articles that were not directly relevant to the specific research questions also were excluded.

Results

From the database, 44 articles were identified, of which 33 met the criteria for inclusion. The documents were original quantitative research, published in English, and directly relevant to the research questions (see Table 1). Most of the studies (52%) were conducted in the United States, followed by Canada (15%), China (9%), and Australia (6%).

Types of Complementary and Alternative Medicine Used

Empirical research has documented that a wide range of CAM types are used by women with breast cancer. Using types of CAM as grouped by NCCAM (2009b) (see Figure 1), of the 33 selected studies, 21 reported that biologically based practices (e.g., herbs, vitamins, foods) were the types of CAM most used, whereas nine studies reported mind-body medicine (e.g., meditation, prayer, mental healing) as the most frequent type of CAM used by women with breast cancer (Alferi, Antoni, Ironson, Kilbourn, & Carver, 2001; Balneaves et al., 1999; Burstein et al., 1999; Henderson & Donatelle, 2003; Montazeri, Sajadian, Ebrahimi, & Akbari, 2005; Owens, Jackson, & Berndt, 2009; Rees et al., 2000; Richardson, Sanders, Palmer, Greisinger, & Singletary, 2000; VandeGreek, Rogers, & Lester, 1999). Only two studies reported whole medical systems (e.g., homeopathic medicine, naturopathic medicine, traditional Chinese medicine) as the type of CAM most frequently used by women with breast cancer (Crocetti et al., 1998; Cui et al., 2004). In addition, only one study reported energy medicine (e.g., Qi gong, Reiki,

therapeutic touch) as the type of CAM most frequently used by women with breast cancer (Shen et al., 2002).

Sources of Information

All 11 studies that investigated sources of information about CAM for women with breast cancer revealed that family and friends were frequently reported as important information sources about CAM, followed by media outlets such as the Internet, magazines, books, newspapers, or journals (Abdullah, Lau, & Chow, 2003; Chou, Horng, Tolmos, & Vargas, 2000; Fasching et al., 2007; Gulluoglu, Cingi, Cakir, & Barlas, 2008; Kremser et al., 2008; Molassiotis et al., 2006; Moschèn et al., 2001; Navo et al., 2004; Salmenpera, 2002; Shen et al., 2002; VandeGreek et al., 1999). Seven of the studies reported healthcare providers as sources of information about CAM for women with breast cancer (Fasching et al., 2007; Kremser et al., 2008; Molassiotis et al., 2006; Moschèn et al., 2001; Navo et al., 2004; Salmenpera, 2002; Shen et al., 2002), whereas CAM providers were reported as sources of information in four studies (Kremser et al., 2008; Molassiotis et al., 2006; Navo et al., 2004; Shen et al., 2002). In addition, three studies reported that a self-help group was the source of information about CAM (Abdullah et al., 2003; Kremser et al., 2008; Molassiotis et al., 2006). Only one study showed that a health insurance company was a source of information about CAM for women with breast cancer (Fasching et al., 2007).

Sociodemographic Factors

Sociodemographic factors found to be associated with CAM use included age, education, income, marital status, health insurance, and support group involvement. Of the 29 studies that investigated sociodemographic factors and CAM use in women with breast cancer, 22 reported that women who were younger and had higher education were more likely to use CAM than those who were older and had less education. Only one study reported that older women were more likely to use CAM than those who were younger (Navo et al., 2004). Only a few studies found that age and education did not relate to CAM use in women with breast cancer (Lengacher et al., 2006; Montazeri et al., 2005).

Of the 29 studies, eight reported that women with breast cancer who had higher income were more likely to use CAM than those who had lower income (Ashikaga, Bosompra, O'Brien, & Nelson, 2002; Chen et al., 2008; Cui et al., 2004; Hann, Allen, Ciambone, & Shah, 2006; Helyer et al., 2006; Lee, Lin, Wrensch, Adler, & Eisenberg, 2000; Navo et al., 2004; Owens et al., 2009). However, two studies reported no relationship between income and CAM use (Henderson & Donatelle, 2003; Kremser et al., 2008).

Regarding marital status, five studies revealed that married women were more likely to use CAM than those who were single (Chen et al., 2008; Chou et al., 2000; Cui et al., 2004; Gulluoglu et al., 2008; Helyer et al., 2006); however, three studies showed no relationship between marital status and CAM use (Hann et al., 2006; Montazeri et al., 2005; Richardson et al., 2000).

In terms of the relationships between health insurance and support groups and CAM use in women with breast cancer, four studies found that women with breast cancer who had private health insurance were more likely to use CAM than those who did not have private insurance (Helyer et al., 2006; Henderson & Donatelle, 2003; Lee et al., 2000; Rakovitch et al., 2005). Three

Table 1. Studies Related to Complementary and Alternative Medicine (CAM) Use Among Women With Breast Cancer

STUDY	SAMPLE	METHOD	TYPES OF CAM USED	SOURCES OF CAM INFORMATION	SOCIODEMOGRAPHIC FACTORS RELATED TO CAM USE	REASONS FOR CAM USE
Abdullah et al., 2003	352 patients with breast cancer in Hong Kong, China	Self-administered questionnaires	Lingzhi (45%), shark cartilage (44%), fungi (29%), ginseng (14%), Qi gong (14%), and others such as herbs and vegetables, natural therapy, animal or animal extracts, or Chinese medical practitioners (35%)	Friends, family members or relatives, mass media, self-help groups, posters, brochures, and pamphlets	Younger age and higher education	Many believed CAM could serve as a supplement to orthodox treatment.
Alferi et al., 2001	231 African American, Hispanic American, and Caucasian women with early-stage breast cancer	Self-administered questionnaires	Meditation or imagery (29%), support groups (23%), psychotherapy (22%), spiritual healing (21%), herbal medications (14%), massage or body therapy (11%), and acupuncture (1%)	Not specified	Younger age and higher education	Not specified
Ashikaga et al., 2002	148 patients with breast cancer in Vermont	Face-to-face interviews	Vitamins (63%), herbal treatments (21%), meditation (21%), traditional massage (20%), yoga (12%), chiropractic (7%), homeopathy (7%), naturopathy (5%), acupuncture (5%), hypnosis (3%), and other (16%)	Not specified	Higher education, higher income, and younger age	Patients believed that CAM was helpful to recovery.
Balneaves et al., 1999	52 women with all stages of breast cancer in an urban center in central Canada	Face-to-face interviews	Meditation or relaxation (64%), vitamins or tonics (58%), spiritual or faith healing (54%), herbal remedies (50%), special food or diets (27%), immune therapies (23%), massage (19%), detoxification (17%), and shark cartilage (8%)	Not specified	Higher education	Patients believed that CAM assisted the body's natural ability to heal.
Balneaves et al., 2006	334 patients with breast cancer from central Canada who were chosen from a cancer registry	Self-administered questionnaires	Vitamin or mineral supplements (68%), herbal or plant (42%), spiritual therapies (35%), physical or movement therapies (32%), psychological or expressive therapies (24%), alternative medical systems (17%), energy therapies (16%), pharmacologic or biologic supplements (15%), diet therapies (10%), and others (3%)	Not specified	Higher education and younger age	Not specified
Burstein et al., 1999	480 women with early-stage breast cancer in Massachusetts	Telephone interviews	Psychological therapies such as relaxation, spiritual healing, and imagery (29%) and healing therapies such as megavitamin, herbs, massage, and acupuncture (28%)	Not specified	Higher education and younger age	Not specified
Chen et al., 2008	5,046 women with primary breast cancer in Shanghai, China	Face-to-face interviews	Supplements such as sporophyte, vitamins, fish oil, or ginseng (77%) and traditional Chinese medicine such as herbal medicine and acupuncture (71%)	Not specified	Higher education, higher income, being married, and younger age	To treat cancer, boost the immune system, and decrease menopausal symptoms

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Table 1. Studies Related to Complementary and Alternative Medicine (CAM) Use Among Women With Breast Cancer (Continued)

STUDY	SAMPLE	METHOD	TYPES OF CAM USED	SOURCES OF CAM INFORMATION	SOCIODEMOGRAPHIC FACTORS RELATED TO CAM USE	REASONS FOR CAM USE
Chou et al., 2000	45 patients with breast cancer being treated at the University of California, Los Angeles, Medical Center	Face-to-face interviews	Vitamins, dietary changes, herbs, and spiritual healing	Family, friends, and media	Being married and younger age	To improve health, follow the physician's recommendations for vitamin intake, and decrease side effects of adjuvant treatments
Crocetti et al., 1998	242 patients with breast cancer in Italy	Self-administered questionnaires	Homeopathy, manual healing, herbs, and acupuncture	Not specified	Higher education and younger age	Physical distress
Cui et al., 2004	1,065 patients with breast cancer in Shanghai, China	Face-to-face interviews	Traditional Chinese medicine (87%); Chinese herb medicine (86%); supplements (85%); physical exercises such as Qi gong, tai chi, and gong fu (66%); support groups (17%); and acupuncture (5%)	Not specified	Higher education, having a younger age, being married, and higher income	Patients believed it would treat their cancer, enhance their immune system, prevent metastasis or manage other discomforts, and lessen menopausal symptoms.
Fasching et al., 2007	796 patients with breast cancer and 234 patients with gynecologic cancer in Duesseldorf, Germany	Face-to-face interviews	Dietary supplements (77%), mistletoe therapy (74%), enzymatic therapy (59%), immun-augmentative therapy (55%), physical therapy (51%), traditional Chinese medicine (43%), biologic treatment (29%), cancer diets (20%), and psychological therapy (20%)	Physician, friends, family members, and a health insurance company	Not specified	Not specified
Gulluoglu et al., 2008	129 patients with breast cancer in northwestern Turkey	Self-administered questionnaires	Herbal medicine (67%) spiritual healing (24%), nutritional support (22%), dietary regulation (11%), physical exercise (11%), musical therapy (4%), massage (2%), acupuncture (2%), and meditation (2%)	Friends and relatives	Younger age and being married	To improve health status
Hann et al., 2006	166 women diagnosed with early-stage breast cancer in the northeastern United States	Telephone interviews	Dietary (54%), vitamins (44%), herbal methods (44%), physical method such as massage or acupuncture (44%), meditation (11%), and prayer (6%)	Not specified	Younger age, higher education, higher income, and attendance in a support group	Not specified
Helyer et al., 2006	32 women with locally advanced breast cancer in Toronto, Canada	Self-administered questionnaires	Dietary such as vitamins, minerals, and vegetarian or low-fat diets; herbal or homeopathy; psychological methods such as meditation, imagery, hypnosis, or faith; physical methods such as massage, acupuncture, yoga, or tai chi; and alternative providers such as chiropractor, naturopathic doctor, acupuncturist, or traditional Chinese medicine doctor	Not specified	Younger age, higher income, being married, Asian ethnicity, having private health insurance, and involvement in cancer support groups	Patients believed that CAM would assist body healing, boost the immune system, and give them a feeling of control.

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Table 1. Studies Related to Complementary and Alternative Medicine (CAM) Use Among Women With Breast Cancer (Continued)

STUDY	SAMPLE	METHOD	TYPES OF CAM USED	SOURCES OF CAM INFORMATION	SOCIODEMOGRAPHIC FACTORS RELATED TO CAM USE	REASONS FOR CAM USE
Henderson & Donatelle, 2003	551 women diagnosed with breast cancer in Portland, OR	Telephone interviews	Relaxation or meditation (28%), herbs (26%), spiritual healing (26%), megavitamins or nutrient therapies (23%), massage (19%), imagery (13%), chiropractor (13%), naturopathy (13%), support groups (13%), lifestyle and diet (9%), immune therapy (5%), acupuncture (5%), energy healing (2%), biofeedback (2%), and hypnosis (1%)	Not specified	Higher education, younger age, and having private health insurance	To enhance overall quality of life, give feelings of control, strengthen the immune system, and reduce stress
Kremser et al., 2008	367 patients with breast cancer in Australia	Self-administered questionnaires	Vitamin supplements (54%), support groups (50%), massage (41%), meditation (39%), diets (24%), yoga (22%), herbal remedies (19%), juices (16%), Reiki (15%), acupuncture (14%), exercise (10%), reflexology (8%), homeopathy (8%), art therapy (5%), tai chi (5%), Chinese medicine (5%), dragon boating (5%), bach flowers (4%), naturopathy (4%), and shark cartilage (4%)	Media such as Internet, magazines, newspapers, television, and radio; doctor; friends; other patients; family; support groups; naturopath practitioner; nurse; Chinese medicine practitioner; pharmacist; and homeopath	Higher education and younger age	Patients believed CAM improved their physical and emotional well-being, boosted the immune system, reduced side effects of treatment, prevented the recurrence of cancer, treated cancer, and reduced symptoms associated with breast cancer.
Lee et al., 2000	379 women with breast cancer in San Francisco, CA	Telephone interviews	Mental methods (30%), dietary therapies (27%), physical methods (14%), herbal or homeopathy (14%), and others (1%)	Not specified	Younger age, higher education, having private insurance, higher income, and use of support groups	Not specified
Lengacher et al., 2006	105 patients with breast cancer in Florida	Self-administered questionnaires	Diet and nutritional supplements such as vitamins or minerals, macrobiotics, herbs, and antioxidants (68%); stress-reducing techniques such as art therapy, music therapy, humor, imagery, prayer or spiritual healing, yoga, or meditation (66%); and traditional and ethnic medicines such as massage, chiropractic, reflexology, therapeutic touch, and aromatherapy (11%)	Not specified	Higher education	Patients believed that CAM reduced physical symptoms or side effects, reduced psychological stress, addressed their dissatisfaction with traditional medical care, and helped them gain a sense of control.
Molassiotis et al., 2006	282 patients with breast cancer from 11 countries in Europe	Self-administered questionnaires	Herbal medicine (46%), spiritual therapies (21%), relaxation (21%), teas (20%), homeopathy (19%), vitamins or minerals (15%), massage (15%), visualization (10%), acupuncture (10%), animal extracts (9%), and support groups (8%)	Friends, family, media, CAM practitioners, Internet, nurses, physicians, and religious groups	Higher education and younger age	To fight cancer, improve physical and emotional well-being, increase hope and optimism, and counter ill effects

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Table 1. Studies Related to Complementary and Alternative Medicine (CAM) Use Among Women With Breast Cancer (Continued)

STUDY	SAMPLE	METHOD	TYPES OF CAM USED	SOURCES OF CAM INFORMATION	SOCIODEMOGRAPHIC FACTORS RELATED TO CAM USE	REASONS FOR CAM USE
Montazeri et al., 2005	177 patients with breast cancer in Iran	Self-administered questionnaires	Prayer or spiritual healing (74%), bio energy (12%), homeopathy (3%), herbs (3%), acupuncture (2%), meditation (2%), yoga (2%), sports medicine (2%), and counseling (2%)	Not specified	No significant factors were found.	Not specified
Morris et al., 2000	288 patients with breast cancer and 329 patients with other forms of cancer from a tumor registry in the United States	Self-administered questionnaires	Nutrition (65%), massage (57%), herbs (49%), chiropractor (43%), relaxation (41%), and acupuncture (31%)	Not specified	Not specified	To relieve pain, control side effects, boost the immune system, and cure cancer
Moschèn et al., 2001	117 patients with breast cancer in Australia	Self-administered questionnaires	Vegetable drinks (53%), megavitamins (51%), mistletoe (49%), minerals (48%), special diets (36%), homeopathy (31%), special teas (29%), relaxation training (26%), enzyme (20%) and thymus preparations (15%), and other (29%)	Physicians, friends and other patients, magazines or books, and general practitioners	Higher education, younger age, more active style of coping, and greater religious involvement	Patients sought an active role in their treatment, had a wish to leave nothing untried, felt CAM complemented conventional treatment, and believed CAM was a gentle treatment free from adverse effects.
Navo et al., 2004	250 patients with breast cancer and 250 patients with gynecologic cancer in Texas	Face-to-face interviews	Megavitamins or minerals (59%) and herbals such as glucosamine chondroitin, garlic, CQ 10, green tea, flaxseed, and fish oil (47%)	Media, friends and family, health professionals, alternative care specialists, and formal education	Older age and higher education	To improve overall health, reduce adverse drug reactions, improve quality of life, and treat cancer
Owens et al., 2009	125 Hispanic patients with cancer in Texas	Self-administered questionnaires	Prayer (93%), humor (83%), music (70%), exercise (65%), relaxation therapy (44%), spirituality (40%), imagery (32%), massage (27%), herbs (26%), folk therapy (22%), group therapy (17%), diet (16%), energy therapy (11%), yoga (11%), biotherapy (10%), homeopathy (7%), chiropractor (6%), Reiki (5%), acupuncture (4%), and hypnosis (2%)	Not specified	Higher income	Not specified
Patterson et al., 2002	126 patients with breast cancer, 114 with prostate cancer, and 116 with colorectal cancer in Washington	Telephone interviews	Dietary supplements (65%); mental therapies such as meditation, spiritual activities, and prayer (19%); and alternative providers such as naturopathic physicians, massage therapists, and spiritual advisors (17%)	Not specified	Higher education	Patients used CAM for general health and well-being, to treat their cancer, to ease cancer-related symptoms, and to treat other diseases.
Rakovitch et al., 2005	251 women diagnosed with breast cancer in Toronto, Canada	Self-administered questionnaires	Dietary methods such as vitamins and low-fat vegetarian diets (91%), psychological methods such as meditation and relaxation (54%), physical therapies such as massage (39%), and herbal or homeopathy (31%)	Not specified	Higher education, younger age, having private health insurance, and having full-time employment	To cure cancer, prevent the spread and recurrence of cancer, assist other treatments, relieve symptoms, boost the immune system, increase quality of life, and give a feeling of control

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Table 1. Studies Related to Complementary and Alternative Medicine (CAM) Use Among Women With Breast Cancer (Continued)

STUDY	SAMPLE	METHOD	TYPES OF CAM USED	SOURCES OF CAM INFORMATION	SOCIODEMOGRAPHIC FACTORS RELATED TO CAM USE	REASONS FOR CAM USE
Rees et al., 2000	714 women with breast cancer in South Thames, United Kingdom	Self-administered questionnaires	Massage or aromatherapy (14%); psychotherapy (13%); chiropractic or osteopathy (10%); relaxation, yoga, and meditation (8%); healing (8%); reflexology (7%); homeopathy (6%); acupuncture (5%); herbal medicine (3%); nutrition (3%); hypnotherapy (2%); and use of support groups (1%)	Not specified	Higher education, younger age, and previous CAM use	To cure or slow down cancer and relieve symptoms
Richardson et al., 2000	60 patients with breast cancer and 393 patients with other forms of cancer in Texas	Self-administered questionnaires	Spiritual practices (81%), vitamins or herbs (63%), movement or physical therapies (59%), mind or body (49%), psychotherapy (41%), special diet (32%), and other (11%)	Not specified	Younger age	Patients felt hopeful when using CAM, believed it to be nontoxic, and felt that CAM use addressed their need for more control.
Salmenpera, 2002	216 patients with breast cancer and 190 patients with prostate cancer in southwestern Finland	Self-administered questionnaires	Vitamins, trace elements, or antioxidant treatments; dietary supplements and natural products; spiritual healing; homeopathy and extract of mistletoe; and other types such as aromatherapy and reflexology	Family or friends, reading, and health-care professionals	Higher education and younger age	Patients believed they were doing as much as they could do; CAM gave them hope and addressed their disappointment in conventional treatments.
Shen et al., 2002	115 patients with advanced-stage breast cancer in an urban center in the United States	Face-to-face structured interviews	Herbal medicine, tai chi, yoga, Qi gong, imagery, spiritual healing, massage, megavitamin, shark cartilage, special diets, energy healing, acupuncture, hypnosis, chiropractic, biofeedback, homeopathy, and folk remedies	Friends, family members, mass media, healthcare professionals, and CAM practitioners	Higher education	To boost the immune system, treat cancer, relieve side effects of treatment, relieve symptoms, reduce stress, and trigger detoxification
Vandegreek et al., 1999	112 women with early-stage breast cancer in the United States	Face-to-face interviews	Prayer (76%), exercise (38%), spiritual healing (29%), megavitamins (25%), relaxation (21%), self-help groups (21%), imagery (19%), herbs (14%), and massage (10%)	Internet	Not specified	Influence from family folklore
Van der Weg & Streuli, 2003	53 patients with breast cancer and 55 patients with other forms of cancer in a rural area of Switzerland	Face-to-face interviews	Mistletoe (74%), homeopathy (24%), diets (12%), bach flower remedies (10%), music and color therapy (7%), massage (7%), spiritual healing (7%), metals and crystals (7%), hypnosis (2%), acupuncture (2%), osteopathy (2%), biofeedback (2%), and Simonton therapy (2%)	Not specified	Not specified	Patients wanted to do as much as possible, to feel more hopeful, and to harness their mental energy; they also believed CAM was nontoxic, corresponded well to their lifestyles, addressed their disappointment in conventional treatment, and helped them avoid chemotherapy or radiotherapy.
Yap et al., 2004	290 women diagnosed with early-stage invasive breast cancer in Toronto, Canada	Self-administered questionnaires	Extracts from organisms such as evening primrose oil or fish oil (28%), herbal therapies (24%), minerals (11%), energy life force therapies such as acupuncture and life path (5%), vitamins (3%), immune boosters (1%), diet therapies (1%), and drugs (1%)	Not specified	Younger age	Not specified

studies reported that women with breast cancer who attended a support group appeared to use CAM more than those who were not involved in a support group (Hann et al., 2006; Helyer et al., 2006; Lee et al., 2000).

Reason for Use

The rationale for CAM use reported by women with breast cancer was diverse. Of the 25 studies, 17 reported recovery or healing as reasons for CAM use. For instance, six studies reported that women used CAM because they believed it was helpful to recovering, healing, and improving health (Ashikaga et al., 2002; Balneaves et al., 1999; Gulluoglu et al., 2008; Helyer et al., 2006; Navo et al., 2004; Patterson et al., 2002). Boosting the immune system was reported as a reason for use in many studies (Chen et al., 2008; Cui et al., 2004; Helyer et al., 2006; Henderson & Donatelle, 2003; Kremser et al., 2008; Morris, Jognson, Homer, & Walts, 2000; Rakovitch et al., 2005; Shen et al., 2002). In addition, reducing side effects of conventional treatments also was reported as a reason to use CAM (Chen et al., 2008; Chou et al., 2000; Cui et al., 2004; Kremser et al., 2008; Lengacher et al., 2006; Molassiotis et al., 2006; Morris et al., 2000; Moschèn et al., 2001; Navo et al., 2004).

Some studies showed that CAM was used to improve emotional health. For example, six studies reported the reason for CAM use among women with breast cancer was to increase the feeling of control (Helyer et al., 2006; Henderson & Donatelle, 2003; Lengacher et al., 2006; Rakovitch et al., 2005; Richardson et al., 2000; Van der Weg & Streuli, 2003). Reducing physical and psychological distress also was reported as the reason to use CAM (Crocetti et al., 1998; Henderson & Donatelle, 2003; Lengacher et al., 2006; Shen et al., 2002).

Nine studies reported that the reason women with breast cancer used CAM was to cure or treat cancer (Chen et al., 2008; Cui et al., 2004; Kremser et al., 2008; Morris et al., 2000; Navo et al., 2004; Patterson et al., 2002; Rakovitch et al., 2005; Rees et al., 2000; Shen et al., 2002). However, only three studies reported dissatisfaction with traditional treatment as the reason for using CAM (Lengacher et al., 2006; Salmenpera, 2002; Van der Weg & Streuli, 2003), and three studies reported that the reason was to supplement conventional treatment (Abdullah et al., 2003; Moschèn et al., 2001; Rakovitch et al., 2005).

Discussion

Biologically based practices (e.g., herbs, vitamins, foods) were the most common types of CAM used by women with breast cancer, followed by mind-body medicine such as prayer, meditation, or spiritual healing. In contrast, energy medicine (e.g., Qi gong, Reiki) and whole medical systems such as naturopathy, homeopathy, and traditional Chinese medicine were less likely to be used by women with breast cancer. However, the conclusion for this research should be made cautiously as investigators classified CAM in different categories. For instance, some studies classified CAM into two categories: healing therapies and psychological therapies (Burststein et al., 1999); others classified CAM into seven categories: special diet, psychotherapy, movement and physical therapy, mind/body therapies, spiritual practices, vitamins and herbs, and other approaches (Richardson et

Biologically Based Practices

Herbs, vitamins, dietary supplements, and natural therapies such as shark cartilage

Energy Medicine

Biofield therapies such as Qi gong, Reiki, or therapeutic touch and bioelectromagnetic-based therapies such as pulsed fields, magnetic fields, or alternating-current and direct-current fields

Manipulative and Body-Based Practices

Chiropractic, osteopathic, and massage

Mind-Body Medicine

Meditation, prayer, mental healing, art therapy, music therapy, dance, cognitive-behavioral therapy, and patient support groups

Whole Medical Systems

Homeopathic medicine, naturopathic medicine, traditional Chinese medicine, and Ayurveda

Figure 1. Types of Complementary and Alternative Medicine Groupings

Note. Based on information from National Center for Complementary and Alternative Medicine, 2009b.

al., 2000); whereas still others divided CAM into 15 categories, such as herbal therapies, energy life force therapies, or physical therapies (Yap et al., 2004). Therefore, it would be helpful if future research used a standardized classification such as the categories of CAM used by NCCAM (2009b).

Reviewed studies showed that the information sources about CAM use for women with breast cancer vary widely, including friends, family members, conventional health professionals, CAM providers, media outlets, self-help groups, and a health insurance company. This may be interpreted as positive as they used a variety of information sources for their health decision making. On the other hand, health professionals were less likely to be the primary information sources when compared to friends and family members; the role of healthcare providers as educators about CAM use should be addressed (Boon et al., 2000). Many studies reported that only about 50% of women with breast cancer who used CAM disclosed CAM use to their physicians (Adler & Fosket, 1999; Lee et al., 2000; Navo et al., 2004). More interesting, Shen et al. (2002) reported that women with advanced-stage breast cancer who used CAM would discuss CAM use with their physicians when they used herbal medicine. In contrast, if they used chiropractic, imagery, spiritual healing, hypnosis, acupuncture, or energy healing, they were less likely to disclose these to their physicians. However, disclosure with the healthcare provider in other cases cannot be determined until additional research is conducted.

The literature revealed that women with breast cancer who were younger and had higher education appeared to engage in CAM use more than those who were older and had less education. Patterson et al. (2002) reported that younger women with breast cancer were more likely to use mental therapies than those who were older. In addition, this study also showed that women with a college education were about five times more likely to see an alternative provider, three times more likely to use mental therapies, and two times more likely to take dietary supplements when compared to patients who had less education. However, as only one descriptive study focused on this

issue, drawing a firm conclusion on this topic may be not warranted until more empirical evidence is provided.

Previously published studies have found that having higher income, being married, having private health insurance, and being involved in a support group were more likely to be positively correlated with CAM use in women with breast cancer. However, some studies reported no relationship among these variables. Therefore, the empirical findings about how income, marital status, health insurance, and support groups relate to CAM use in women with breast cancer should be explored.

The reason for CAM use most often reported by women with breast cancer was to promote healing and emotional health. In terms of physical health promotion, reduction of side effects of treatments was another reason for use (Chou et al., 2000; Hann et al., 2006; Kremser et al., 2008; Owens & Dirksen, 2003); however, Yap et al. (2004) showed that women with breast cancer who used CAM were more likely to experience symptoms (e.g., stiffness, pain, numbness, swelling) in the shoulder or arm than non-users as an outcome of use. Therefore, additional research is needed.

Carpenter, Ganz, and Bernstein (2009) showed that women with breast cancer who reported poorer emotional functioning and more medical issues were more likely to use CAM than those who reported better emotional functioning and who did not report having medical problems. In addition, previous studies have shown that CAM users were more likely to report depression than non-users (Burstein et al., 1999; Montazeri et al., 2005). Moschèn et al. (2001) reported that the more depressive the coping styles were in women with breast cancer, more types of CAM were used. However, Rakovitch et al. (2005) reported that CAM use in women with breast cancer was not related to anxiety and depression. Additional research is needed to clarify this issue.

Although a lack of evidence exists about efficacy of CAM in treating cancer, previous studies have shown that women with breast cancer still use CAM in the hope that it could cure cancer. This is an important issue that healthcare providers should address. In addition, it confirms why nurses need to communicate with patients and learn more about CAM use among women with breast cancer. Although only a few previous studies showed dissatisfaction with conventional treatment as a reason to use CAM, it does not mean that women with breast cancer ignore CAM use. Conversely, many of them use CAM as a complement to traditional therapies. Consequently, negative effects from interaction between CAM and conventional therapies might occur (Rakovitch et al., 2005).

Implications for Nursing

This review highlights several implications for healthcare providers who work with women with breast cancer. First, the analysis found that women with breast cancer use a variety of CAM types for a variety of reasons. Oncology nurses or clinicians should screen or assess details about the use of CAM in each patient so that nursing counseling would be more appropriate on an individual basis. The following questions could be used for screening or assessment in everyday nursing practice: "Could you please tell us what you consider to be CAM?" "Could you please tell us what types of CAM you have used?" "When did you begin to use CAM, before or after breast cancer diagnosis?" "Where do

you get information about CAM?" "Why were you interested in using CAM?" (Balneaves, Truant, Kelly, Verhoef, & Davison, 2007, p. 975). This understanding may guide oncology nurses as they take care of these patients. For example, if women with breast cancer use mind-body medicine such as prayer or meditation, it might be a signal that patients are struggling with coping with their disease or treatment and may need suggestions on how to deal with these issues. Therefore, referring them to experts such as psychotherapists would be helpful (Patterson et al., 2002).

More importantly, many women with breast cancer believe that CAM can cure cancer. Communication about CAM between healthcare providers and patients should be open so that safe and holistic care can be provided (Baum, Ernst, Lejeune, & Horneber, 2006; Owens et al., 2009). Weiger et al. (2002) suggested that healthcare providers share with patients the current empirical evidence showing that CAM may be helpful in terms of relief of cancer-related symptoms, but it is not shown to be effective at slowing disease progression or curing cancer.

The findings did not clearly show the correlations between CAM use and sociodemographic factors such as income, married status, health insurance, and use of support groups. However, previous studies on CAM use by women with breast cancer revealed that women who had higher education and were younger appeared to use CAM more than those who had less education and were older. Therefore, healthcare providers may use this information when assessing the use of CAM by women with breast cancer. Other sociodemographic factors such as income, marital status, health insurance, and support group involvement should be considered for future research as well.

In addition, the lack of information about why women with breast cancer do not disclose the use of CAM to healthcare providers or use them as their primary sources of information about CAM needs additional study. Qualitative studies could be used to explore the perspectives of individual decision making and reasoning (Adler, 1999; Verhoef, Balneaves, Boon, & Vroegindewey, 2005).

All of the studies in this literature review used self-report by the patients. Such a method influences the quality of findings. Consequently, randomized, controlled trials are needed to provide information so that patients will be able to make informed choices for their treatment (Yap et al., 2004). This literature review also revealed that, at the present, a standard tool to measure CAM use has not yet been developed. As a result, conducting research to develop a tool for evaluating CAM use would be helpful. As mentioned previously, the development and application of a nomenclature for naming of types of CAM also are recommended for standardization of terms for future studies.

The available empirical research used in this literature review included only articles published in English, and more than 50% of the studies were conducted in the United States. Consequently, additional research with various ethnic groups in the United States and in other parts of the world would provide additional information about CAM use by women with breast cancer.

The authors take full responsibility for the content of the article. The authors did not receive honoraria for this work. The content of this article has been reviewed by independent peer reviewers to ensure that it is balanced, objective, and free from

commercial bias. No financial relationships relevant to the content of this article have been disclosed by the authors, planners, independent peer reviewers, or editorial staff.

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References

Abdullah, A.S.M., Lau, Y., & Chow, L.W.C. (2003). Pattern of alternative medicine usage among the Chinese breast cancer patients: Implication for service integration. *American Journal of Chinese Medicine, 31*, 649–658. doi: 10.1142/S0192415X03001284

Adler, S.R. (1999). Complementary and alternative medicine use among women with breast cancer. *Medical Anthropology Quarterly, 13*, 214–222. doi: 10.1525/maq.1999.13.2.214

Adler, S.R., & Fosket, J.R. (1999). Disclosing complementary and alternative medicine use in the medical encounter: A qualitative study in women with breast cancer. *Journal of Family Practice, 48*, 453–458.

Alferi, S.M., Antoni, M.H., Ironson, G., Kilbourn, K.M., & Carver, C.S. (2001). Factors predicting the use of complementary therapies in a multi-ethnic sample of early-stage breast cancer patients. *Journal of the American Medical Women's Association, 56*, 120–123.

Ashikaga, T., Bosompra, K., O'Brien, P., & Nelson, L. (2002). Use of complementary and alternative medicine by breast cancer patients: Prevalence, patterns, and communication with physicians. *Supportive Care in Cancer, 10*, 542–548.

Astin, J.A., Reilly, C., Perkins, C., & Child, W.L. (2006). Breast cancer patients' perspectives on and use of complementary and alternative medicine: A study by the Susan G. Komen Breast Cancer Foundation. *Journal of the Society for Integrative Oncology, 4*, 157–169. doi: 10.2310/7200.2006.019

Balneaves, L.G., Bottorff, J.L., Hislop, T.G., & Herbert, C. (2006). Levels of commitment: Exploring complementary therapy use by women with breast cancer. *Journal of Alternative and Complementary Medicine, 12*, 459–466. doi: 10.1089/acm.2006.12.459

Balneaves, L.G., Kristjanson, L.J., & Tatarzyn, D. (1999). Beyond convention: Describing complementary therapy use by women living with breast cancer. *Patient Education and Counseling, 38*, 143–153. doi: 10.1016/S0738-3991(99)00061-0

Balneaves, L.G., Truant, T.L., Kelly, M., Verhoef, M.J., & Davison, B.J. (2007). Bridging the gap: Decision-making process of women with breast cancer using complementary and alternative medicine (CAM). *Supportive Care in Cancer, 15*, 973–983.

Baum, M., Ernst, E., Lejeune, S., & Horneber, M. (2006). Role of complementary and alternative medicine in the care of patients with breast cancer: Report of the European Society of Mastology (EUSOMA) workshop, Florence, Italy, December 2004. *European Journal of Cancer, 42*, 1702–1710.

Boon, H., Stewart, M., Kennard, M.A., Gray, R., Sawka, C., Brown, J.B., . . . Haines-Kamka, T. (2000). Use of complementary/alternative medicine by breast cancer survivors in Ontario: Prevalence and perceptions. *Journal of Clinical Oncology, 18*, 2515–2521.

Burstein, H.J., Gelber, S., Guadagnoli, E., & Weeks, J.C. (1999). Use of alternative medicine by women with early-stage breast cancer. *New England Journal of Medicine, 340*, 1733–1739.

Carpenter, C.L., Ganz, P.A., & Bernstein, L. (2009). Complementary and alternative therapies among very long-term breast cancer survivors. *Breast Cancer Research and Treatment, 116*, 387–396.

Chen, Z., Gu, K., Zheng, Y., Zheng, W., Lu, W., & Shu, X.O. (2008). The use of complementary and alternative medicine among

Chinese women with breast cancer. *Journal of Alternative and Complementary Medicine, 14*, 1049–1055.

Chou, J.C., Horng, P.M., Tolmos, J., & Vargas, H.I. (2000). Alternative therapy use by breast cancer patients. *Medicine of the Americas, 11*, 26–29.

Crocetti, E., Crotti, N., Feltrin, A., Ponton, P., Geddes, M., & Buiatti, E. (1998). The use of complementary therapies by breast cancer patients attending conventional treatment. *European Journal of Cancer, 34*, 324–328. doi: 10.1016/S0959-8049(97)10043-0

Cui, Y., Shu, X.O., Gao, Y., Wen, W., Ruan, Z.X., & Jin, F. (2004). Use of complementary and alternative medicine by Chinese women with breast cancer. *Breast Cancer Research and Treatment, 85*, 263–270. doi: 10.1023/B:BREA.0000025422.26148.8d

Fasching, P.A., Thiel, F., Nicolaisen-Murmann, K., Rauh, C., Engel, J., Lux, M.P., . . . Bani, M.R. (2007). Association of complementary methods with quality of life and life satisfaction in patients with gynecologic and breast malignancies. *Supportive Care in Cancer, 15*, 1277–1284. doi: 10.1007/s00520-007-0231-1

Gulluoglu, B.M., Cingi, A., Cakir, T., & Barlas, A. (2008). Patients in northwestern Turkey prefer herbs as complementary medicine after breast cancer diagnosis. *Breast Cancer, 3*, 269–273.

Hann, D., Allen, S., Ciambone, D., & Shah, A. (2006). Use of complementary therapies during chemotherapy: Influence of patients' satisfaction with treatment decision making and the treating oncologist. *Integrative Cancer Therapies, 5*, 224–231.

Helyer, L.K., Chin, S., Chui, B.K., Fitzgerald, B., Verma, S., Rakovitch, E., . . . Clemons, M. (2006). The use of complementary and alternative medicines among patients with locally advanced breast cancer—A descriptive study. Retrieved from <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=16504038>

Henderson, J.W., & Donatelle, R.J. (2003). The relationship between cancer locus of control and complementary and alternative medicine use by women diagnosed with breast cancer. *Psycho-Oncology, 12*, 59–67. doi: 10.1002/pon.636

Jacobson, J.S., Workman, S.B., & Kronenberg, F. (2000). Research on complementary/alternative medicine for patients with breast cancer: A review of the biomedical literature. *Journal of Clinical Oncology, 18*, 668–683.

Kremser, T., Evans, A., Moore, A., Luxford, K., Begbie, S., Bensoussan, A., . . . Zorbas, H. (2008). Use of complementary therapies by Australian women with breast cancer. *Breast Journal, 17*, 387–394. doi: 10.1016/j.breast.2007.12.006

Lee, M.M., Lin, S.S., Wrensch, M.R., Adler, S.R., & Eisenberg, D. (2000). Alternative therapies used by women with breast cancer in four ethnic populations. *Journal of the National Cancer Institute, 92*, 42–47. doi: 10.1093/jnci/92.1.42

Lengacher, C.A., Bennett, M.P., Kip, K.E., Gonzalez, L., Jacobson, P., & Cox, C.E. (2006). Relief of symptoms, side effects, and psychological distress through use of complementary and alternative medicine in women with breast cancer. *Oncology Nursing Forum, 33*, 97–104. doi: 10.1188/06.ONF.97-104

Molassiotis, A., Scott, J.A., Kearney, N., Pud, D., Magri, M., Selvekerova, S., . . . Patiraki, E. (2006). Complementary and alternative medicine use in breast cancer patients in Europe. *Supportive Care in Cancer, 14*, 260–267. doi: 10.1007/s00520-005-0883-7

Montazeri, A., Sajadian, A., Ebrahimi, M., & Akbari, M.E. (2005). Depression and the use of complementary medicine among breast cancer patients. *Supportive Care in Cancer, 13*, 339–342.

Morris, K.T., Jognson, N., Homer, L., & Walts, D. (2000). A comparison of complementary therapy use between breast cancer

patients and patients with other primary tumor sites. *American Journal of Surgery*, 179, 407–411.

Moschèn, R., Kemmler, G., Schweigkofler, H., Holzner, B., Dünser, M., Richter, R., . . . Sperner-Unterweger, B. (2001). Use of alternative/complementary therapy in breast cancer patients—A psychological perspective. *Supportive Care in Cancer*, 9, 267–274.

National Center for Complementary and Alternative Medicine. (2009a). The use of complementary and alternative medicine in the United States. Retrieved from http://nccam.nih.gov/news/camstats/2007/camsurvey_fs1.htm

National Center for Complementary and Alternative Medicine. (2009b). What is CAM? Retrieved from <http://nccam.nih.gov/health/whatiscam/overview.htm>

Navo, M.A., Phan, J., Vaughan, C., Palmer, J.L., Michaud, L., Jones, K.L., . . . Smith, J.A. (2004). An assessment of the utilization of complementary and alternative medication in women with gynecologic or breast malignancies. *Journal of Clinical Oncology*, 22, 671–677. doi: 10.1200/JCO.2004.04.162

Owens, B. (2007). A test of the self-help model and use of complementary and alternative medicine among Hispanic women during treatment for breast cancer [Online exclusive]. *Oncology Nursing Forum*, 34, E42–E50. doi: 10.1188/07.ONFE.E42-E50

Owens, B., & Dirksen, S.R. (2003). Review and critique of the literature of complementary and alternative therapy use among Hispanic/Latino women with breast cancer. *Clinical Journal of Oncology Nursing*, 8, 151–156. doi: 10.1188/04.CJON.151-156

Owens, B., Jackson, M., & Berndt, A. (2009). Complementary therapy used by Hispanic women during treatment for breast cancer. *Journal of Holistic Nursing*, 27, 167–176.

Patterson, R.E., Neuhaus, M.L., Hedderson, M.M., Schwartz, S.M., Standish, L.J., Bowen, D.J., & Marshall, L.M. (2002). Types of alternative medicine used by patients with breast, colon, or prostate cancer: Predictors, motives, and costs. *Journal of Alternative and Complementary Medicine*, 8, 477–485.

Rakovitch, E., Pigno, J.P., Chartier, C., Ezer, M., Verma, S., Dranitsaris, G., & Clemons, M. (2005). Complementary and alternative medicine use is associated with an increased perception of breast cancer risk and death. *Breast Cancer Research and Treatment*, 90, 139–148. doi: 10.1007/s10549-004-3779-1

Rees, R.W., Feigel, I., Vickers, A., Zollman, C., McGurk, R., & Smith, C. (2000). Prevalence of complementary therapy use by women with breast cancer: A population-based survey. *European Journal of Cancer*, 36, 1359–1364.

Richardson, M.A., Sanders, T., Palmer, J.L., Greisinger, A., & Singleary, S.E. (2000). Complementary/alternative medicine use in a comprehensive cancer center and the implications for oncology. *Journal of Clinical Oncology*, 18, 2505–2514.

Salmenpera, L. (2002). The use of complementary therapies among breast and prostate cancer patients in Finland. *European Journal of Cancer Care*, 11, 44–50.

Shen, J., Andersen, R., Albert, P.S., Wenger, N., Glaspy, J., Cole, M., & Shekelle, P. (2002). *Use of complementary/alternative therapies by women with advanced-stage breast cancer*. Retrieved from <http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=122074&blobtype=pdf>

VandeGreeck, L., Rogers, E., & Lester, J. (1999). Use of alternative therapies among breast cancer patients compared to the general population. *Alternative Therapies in Health and Medicine*, 5, 71–76.

Van der Weg, F., & Streuli, R.A. (2003). Use of alternative medicine by patients with cancer in a rural area of Switzerland. *Swiss Medical Weekly*, 133, 233–240.

Verhoef, M.J., Balneaves, L.G., Boon, H.S., & Vroegindewey, A. (2005). Reasons for and characteristics associated with complementary and alternative medicine use among adult cancer patients: A systematic review. *Integrative Cancer Therapies*, 4, 274–286. doi: 10.1177/1534735405282361

Weiger, W.A., Smith, M., Boon, H., Richardson, M.A., Kaptchuk, T.J., & Eisenberg, D.M. (2002). Advising patients who seek complementary and alternative medical therapies for cancer. *Annals of Internal Medicine*, 137, 889–903.

Yap, K.P.L., McCready, D.R., Fyles, A., Manchul, L., Trudeau, M., & Narod, S. (2004). Use of alternative therapy in postmenopausal breast cancer patients treated with tamoxifen after surgery. *Breast Journal*, 10, 481–486.

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